2-189 REV. 4491



E. I. DU PONT DE NEMOURS & COMPANY

WILMINGTON, DELAWARE 19898

POLYMER PRODUCTS DEPARTMENT

100 i 110 i

Edo - Chem Fals

August 21, 1984

Mr. L. James Newman Chemical Fabrics Corporation P. O. Box 476 North Bennington, VT 05257

Dear Jim:

Enclosed is Paul Jann's report on his odor survey conducted on June 19, 20 and 21, 1984. Included are all measurement data, community impact modeling results and resultant recommendations to achieving reduced odor intensity level.

It appears to be a complete and well illustrated working document. We hope it will be useful to at least reducing the neighborhood complaints.

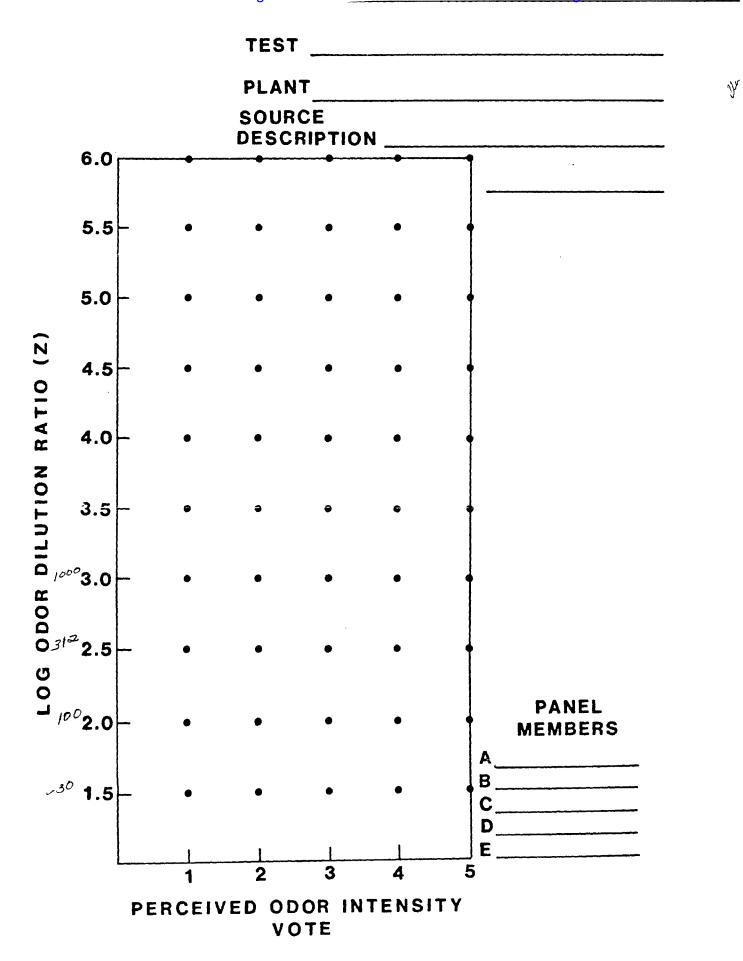
Sincerely,

T. Jerry Linton Accounts Manager

TJL:mbb

Enclosure

cc: W. C. Cook





E. I. DU PONT DE NEMOURS & COMPANY

WILMINGTON, DELAWARE 19898

CC: M. W. Westley - PPD - CR TSL

J. Linton - PPD - Concord Place

F. H. Fuller - ESD - L-1351*

E. N. Helmers - ESD - L-1352*

I. C. 13 - AQ&HE

ENGINEERING DEPARTMENT

August 3, 1984

K. W. LAU (2)
POLYMER PRODUCTS DEPARTMENT
CHESTNUT RUN

POLYMER PRODUCTS - CHESTNUT RUN TSL LAB AIR QUALITY CUSTOMER (CHEM FAB) ODOR PROBLEM - PHASE I REPORT

Reference: Letter P. R. Jann to M. W. Wesley - Site Visit Report - May 24, 1984

Summary

An odor survey was performed for Chem Fab, North Bennington, Vermont, on June 19, 20, and 21. The testing included: odor measurements for dilutions to threshold, total unburned organics, and stack temperature and flow data. The odor strength (Z_2) of each stack and the fugitive odor from the building's ridgevent were then modeled using several computerized building downwash models to predict community odor impact. The modeling was also used to verify proposed recommendations to alleviate the problem. . Based on the results, the ridgevent was identified as the major odor source for odors above threshold detection close to the plant site (< 500 ft). All stacks had less than 10 ppm (parts per million) unburned hydrocarbon as measured by a gas chromatograph with a flame ionization detector. Recommendations include ducting the ridgevent to a 25 ft stack, raising several short stacks, and adding reducing tips to several large stacks to increase their exit velocity.

Background

The Chem Fab plant has been experiencing occasional mal-odor complaints (about 2-3 per month) from several nearby neighbors even though all of its fabric coating lines have Torvex® catalytic fume abators on each of their stacks. ESD's Air Quality group was asked to provide engineering assistance to help remedy this situation. After an initial site visit (see Reference letter) to develop a scope of work, a testing program was implemented which included stack sampling for odor strength and total unburned hydrocarbons. The testing was performed on

June 19, 20, and 21 during heat cleaning of fabric and heavy Teflon®-TFE coating operations. The plant engineers indicated that these two operations are the major odor sources and that most compliants coincide with the fabric heat cleaning cycle. The odor character during this cycle has a very disagreeable character (burnt hair). The Teflon® coating cycle has a more pungent, plastic-like smell.

Odor Sampling

In order to assess the overall odor emission rate of the Chem Fab plant, an odor survey was performed for all point sources and fugitive odors. Total unburned hydrocarbon measurements were also made to check performance of the abators and determine if any correlation exists between odor strength and total organics. Odor samples were collected in large Tedlar® bags following EPA Method 18 (bag-in-a-drum). A dynamic dilution olfactometer (Figure 1) is used to evaluate each bag sample within four hours using an odor panel of at least four judges. Panelists vote electronically to indicate their perception of the odor's strength using the following scale:

1 = No odor

2 = Just Detectable (Threshold)

3 = Slight odor
4 = Moderate odor
5 = Strong odor

A dose response curve is then plotted for \log_{10} dilution ratio vs. perceived odor intensity. Note Figure 2. The median odor threshold dilution ratio (Z_2) can then be determined from this graph. Z_2 represents the dilution ratio at which 50% of the panel just detected an odor and 50% did not. Z_2 can also be used to represent the odor strength of the source; ie, Z_2 = 500 means 500 cubic feet of fresh air is required to dilute one cubic foot of odorous air to reach the just detectable level.

Test Results

Table I summarizes the results of the odor evaluations and the corresponding unburned hydrocarbon concentrations measured in the stack at the same time the odor samples were collected. Based on dilution ratios the odor sources are all fairly weak, ranging from $Z_2=320$ to $Z_2=3200$. The total unburned hydrocarbon measurements support these low levels since all stacks were below 10.0 ppm (as CH₄) total organic response. All readings were taken in the stack using a Century OVA portable gas chromatograph with a flame ionization detector (FID). The portable GC/FID was calibrated with a Matheson standard mixture of 61 ppm methane in

air. Stack flow measurements were obtained from 16 point standard pilot traverses on right angle diameters.

Odor Modeling

Wilson's "Rooftop" model was first employed to evaluate the Chem Fab building's wake effects and re-entrainment potential. The model very conservatively estimates the contamination of air intakes by exhaust from nearby fume hood vents. Besides defining the highly turbulent, recirculation zones above a roof, it also calculates the minimum dilution of a stack contaminant at the point of interest, ie, A/C intake or any closeby receptor. Note figures 3 and 4.

The "Rooftop" model was run for all seven existing Chem Fab stacks using odor dilution ratio (Z_2) substituted for stack concentration (ppm). This resulted in defining the recirculation zones of the building (illustrated in Figure 5) and a dilution profile of each stack at various windspeeds including the critical wind speed (condition of lowest or minimum dilution). See Appendix A.

Several stacks (BCD, E, G, and J) had total minimum dilutions less than the source strength at their critical windspeed. This means additional stack height or other modification (tip area reduction) is required to insure that the minimum dilution of stack-to-recteptor is always greater than the odor dilution ratio (so that odors are not perceptible). These stack deficiencies were found to be minor in comparison to the odor impact of the ridgevent. A detailed list is given under "Recommendations" along with the associated individual priority.

The ridgevent is essentially a line source 300 ft long by 1.0 ft wide by 1.5 ft high. The Wilson "Rooftop" model was not appropriate for this reason. Instead, Du Pont's "STACKA" model was used. This model is a Gaussian type, very similar to EPA's FTMTP model, but with many added features. For this application, Pasquill-Gifford dispersion coefficients were used (5-10 minute averaging time) along with the Briggs-downwash option. The model can handle up to 30 sources and relate the contribution of each to a chosen downwind receptor. Graphics are also available which can label sources, receptors, and ground level maximum

¹D. J. Wilson. "A Design Procedure for Estimating Air Intake Contamination From Nearby Exhaust Vents." Presented at ASHRAE Meeting, (Washington, DC), 1983.

concentration. Table II summarizes the input data and Figure 6 illustrates the Chem Fab sources and one close-by receptor (300 ft away). The wind vector was chosen to align most of the stacks along it in a least squares fit. This would be a worst case situation with the stack plumes lined up as much as possible. Another feature of the "STACKA" model is its ability to find the maximum concentration under worst case meteorology searching all stabilities (A through F) and wind speeds of 3 ft/sec through 42 ft/sec. The resulting predictions of downwind concentration, in this case odor level (Z_2) , are the highest conceivable by weather, wind direction, and building downwash.

One further note: In order to simulate the ridgevent, a series of 16 short stacks were evenly spaced along the roof peak. Note Figure 6. The flow and stack area were ratioed to equal the total flow of the entire ridgevent and duplicate its very low velocity (0.52 ft/sec).

Modeling Results and Discussion

The results of the composite "STACKA" modeling indicate that under worst case meteorology, the abator stacks alone do not cause perceptible odor levels either at the nearby receptor or at the point of downwind maximum concentration 2700 feet away. Note Table III, Summary of Modeling Results. Case 1 has two stabilities listed, unstable Class B results in the highest nearby receptor odor level ($Z_2 = 0.28$), and stable Class E results in the highest downwind odor level ($Z_2 = 0.91$). These two conditions are also illustrated graphically in Figures 7 and 8.

However, when the ridgevent is added into the model, a very stable Class F results in perceptible odor about four times above threshold ($Z_2=3.8$) at the nearby receptor. Note Table III, Case 2 and graphically in Figures 9 and 10. In order to see the nearby odor level pattern more clearly, Figures 11 and 12 were produced at double scale.

The ridgevent is clearly in the building's rooftop recirculation cavity and has no velocity to escape under any windspeed condition. It therefore follows the roofline flow pattern and drops toward ground level very quickly. (Note Figure 5.) In order to alleviate this condition, it must be discharged above the recirculation cavity, approximately 25 ft above roof level. Modeling this remedial condition results in a $Z_2=0.36$ worst case odor level for the nearby receptor and downwind maximum at approximate threshold ($Z_2=1.0$). (Note Table III, Case 3.) See "STACKA" output examples in Appendix B.

sone)

Recommendations

- 1. Ridgevent Collect and duct air to raised stack (25 ft).
- 2. Tower E Reduce stack tip area to 24-inch diameter.
- 3. Tower G Reduce stack tip area to 24-inch diameter.
- 4. Tower J Raise stack 15 feet.
- 5. Tower BCD Reduce stack tip area to 12-inch diameter or raise stack 6 ft.

The ridgevent is the primary odor source impacting nearby neighbors. It needs to be enclosed and ducted to a relatively tall stack. Since it is in 3 or 4 sections, each section could be ducted to a separate stack. Frank Fuller, ESD, concurs with this approach and can help with design requirements if you wish. The existing abator stacks are hot and fairly tall (except J and K). They do not downwash appreciably; but due to the sloping terrain in the area, it would be wise to enhance their dispersion with an increase in exit velocity. This can be accomplished by adding a reducing tip to Stacks BCD, E, ang G. Stack J is short and has a much higher odor intensity than Stack K next to it. Therefore, it should be raised 15 ft.

Table III, Case 4 illustrates the results of all modifications. The odor intensity level is further reduced by one-third at the nearby receptor location. Priority should be focused on the ridgevent and to a lesser extent on the stack tip reductions.

If you have any questions or require further assistance, please call me at 302-366-3219.

ENGINEERING SERVICE DIVISION Air Quality and Hazards Engineering

P. R. Vann

Senior Engineer

PRJ:ms0 PRJ 1:28

Atchs

*No appendices.

ODOR AND UNBURNED HYDROCARBON SAMPLE DATA - 7/11/84

	Sample ID	Tower	Odor Sampling Time	Odor Strength (Z ₂ Ratio)	Total Hydrocarbon THC* (as CH ₄)
6/19	A1 (Exh) A2 (Exh) A (Inlet) B1 (Exh)	E (Heat treat) E (Heat treat) E (Heat treat) ECD (TFE)	2:00-2:10 2:17-2:25 3:15-3:20 2:38-2:45	3200 1000 3200 2100	<0.1 ppm <0.1 ppm <.4 ppm 3.8 ppm
6/20	1 (Inlet) 7 (Exh) 2 (Exh) 3 (Exh) 4 (Exh) 5 (Exh) 6 (Exh)	E (TFE) E (TFE) K (TFE) J (TFE) M (TFE) G (TFE) A (TFE)	3:20-3:35 2:50-3:05 10:25-10:40 10:45-11:00 11:10-11:22 11:35-11:50 2:15-2:35	1000 1000 320 660 660 Bag Leaked 660	4.8 ppm 1.2 ppm 3.6 - 4.4 1.4 - 1.8 .46 <0.1 ppm 2.8 ppm
6/21	8 (Exh) 9 (Exh) 10 (Vent) 11 (Exh)	J (TFE) G (TFE) Ridge E (TFE & Silcon oil)	9:00-9:10 9:18-9:35 9:45-10:00 10:05-10:15	2100 3200 660 3200	8.1 - 9.5 0.6 1.3 - 1.5 3.1 ppm

PRJ:mso PRJ 1:29

Z₂ = Median odor threshold of 4-member odor panel (50% detect, 50% do not detect odor).

^{*}Century OVA portable GC (61 ppm, methane calib. std.) Flame Ionization Detector.

TABLE II

CHEM FAB MODELING DATA SUMMARY

Stack I.D.	Flow cfm @ 70°F	Temperature	Diameter (in)	Area (ft ²)	Gas Exit Velocity (cfs)	Stack Height Above Roof (ft)	Odor Threshold Z ₂	Total Unburned Org. (as CH ₄)
Tower A	750	582.	12.	.785	31.3	3.5 + 20. cupola	660	2.8
B, C, D	3303	437.	16.	1.40	67.1	16.	2100	4.8
E	7995	544.	30.	4.91	51.4	25.5	1000 3200	1.0 - 1.4
F	NA		28.			5.		
G	7070	584.	30.	4.91	47.3	28.	3200	<0.2 .6 - 1.4
Н	NA		28.			5.1		
J	1030	461.	12.	.785	38.1	6.8	660 2100	1.4 - 1.8 7.8 - 9.5
K	1030	520.	14.	1.07	29.6	8.8	320	3.6 - 4.4
М	_3230	574.	16.	1.40	75.6	13.8	660	.46
Ridge	8600	124	12" x 300"	3615.	0.52	1.5	660	0.6 - 1.5

PRJ:mso PRJ 1:30

TABLE III SUMMARY OF MODELING RESULTS

<u>0do</u> 1	s Sources	Downwind Odor Level	Distance To Downwind Maximum* (ft)	Downwind of Building
1.	All stacks			
	Unstable (B) Stable (E)			0.28 0.016
2.	All stacks p	olus ridgeva	ent	
	Unstable (A) Stable (F)	20. 250.	160. (on roof 240. (on roof	0.69
3.	All stacks p	olus ducted	ridgevent	
	Unstable (8) Stable (E)		1000. 2700.	0.36
4.	All stacks w	ith modific	ations plus d	ucted ridgevent
	Unstable (B) Stable (E)	0.66 0.87	1000. 2900.	0.22 0.0011

^{*}Downwind distance refers to origin (0; 0) of model. Chem Fab building extends to 270 ft on X-axis.

 Z_2 = Dilution to detection ratio. It is the volume (cubic feet) of clean air required to dilute one cubic foot of odorous air to the just detectable threshold. Z_2 ratio must be above 1.0 to be detectable by 50% of odor panel.

PRJ:mso PRJ 1:28 K

1

E

J

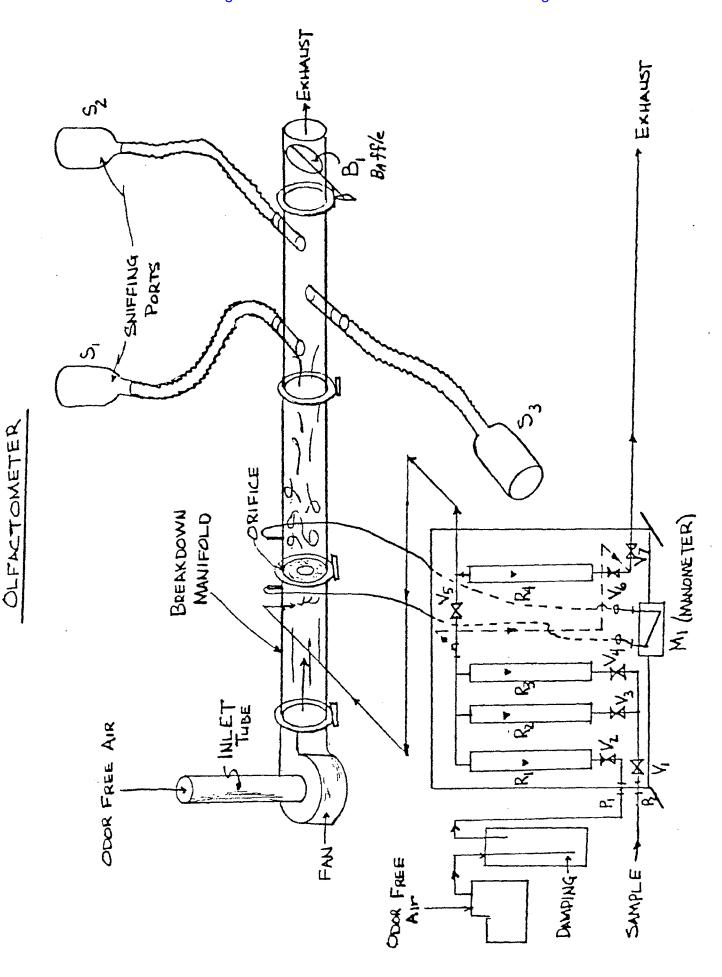
3

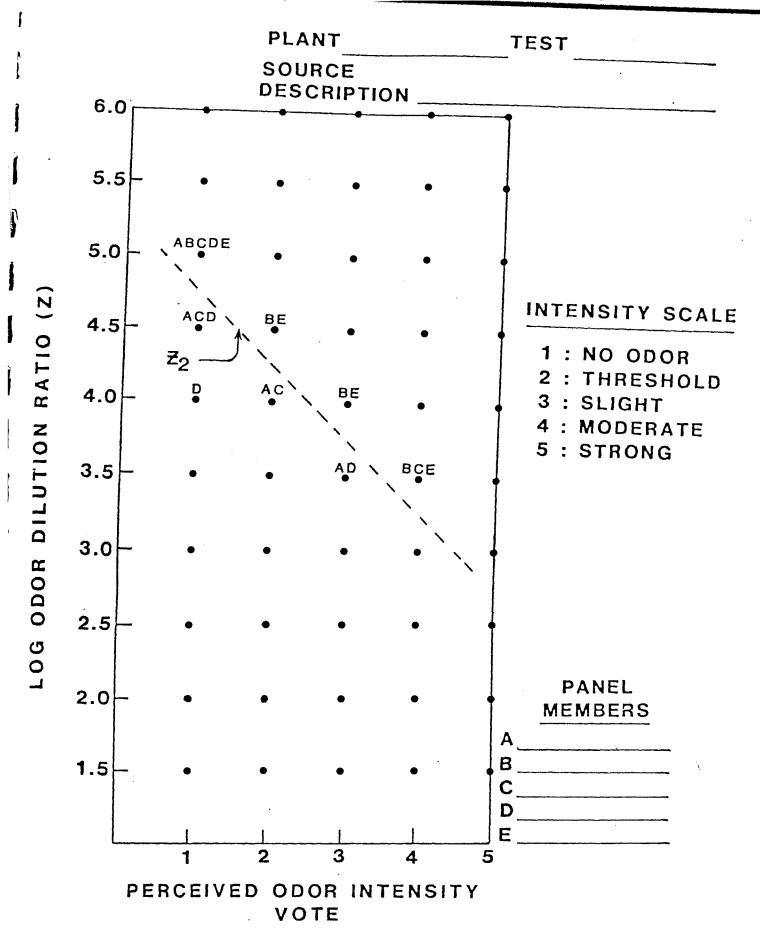
]

FIGURE

1

]





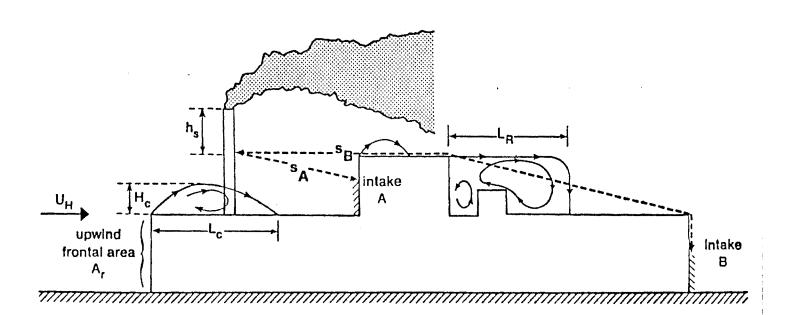
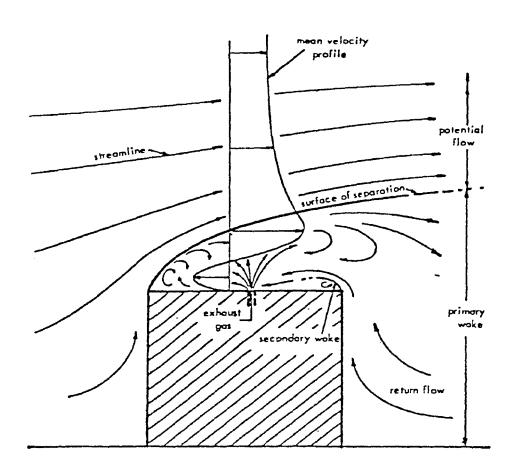


Figure 3. Effect of Rooftop Obstacles on Effective Stack Height and Yent-to-Intake Distance.

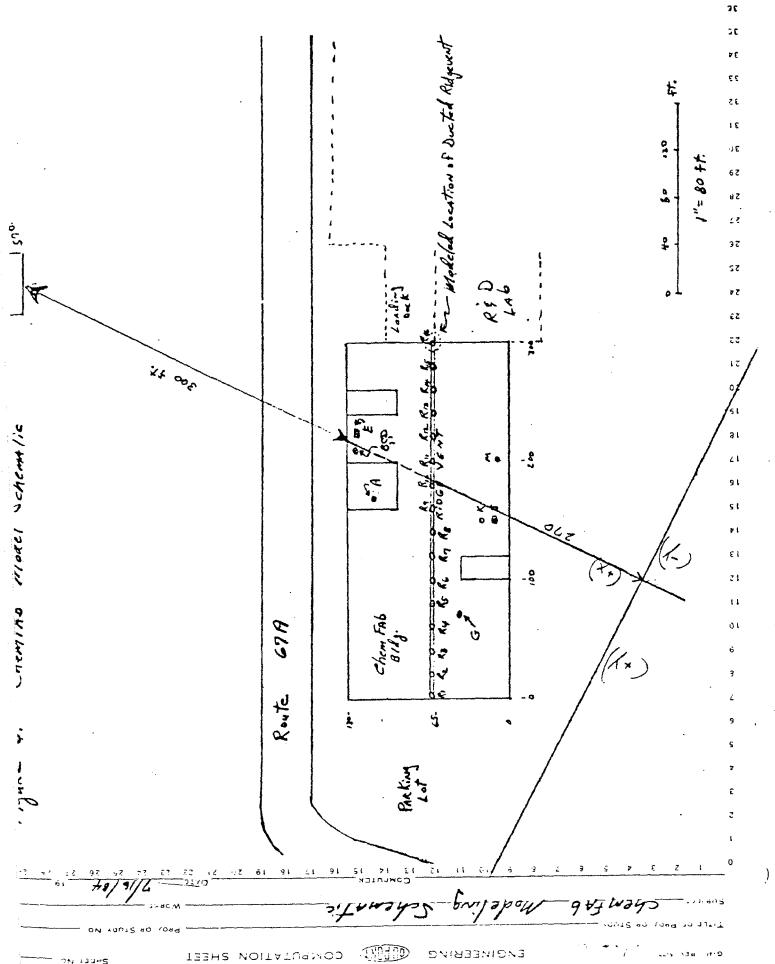
The second of th

FIGURE 4

TYPICAL FLOW PATTERN AROUND CUBE A WITH ONE FACE NORMAL TO THE WIND

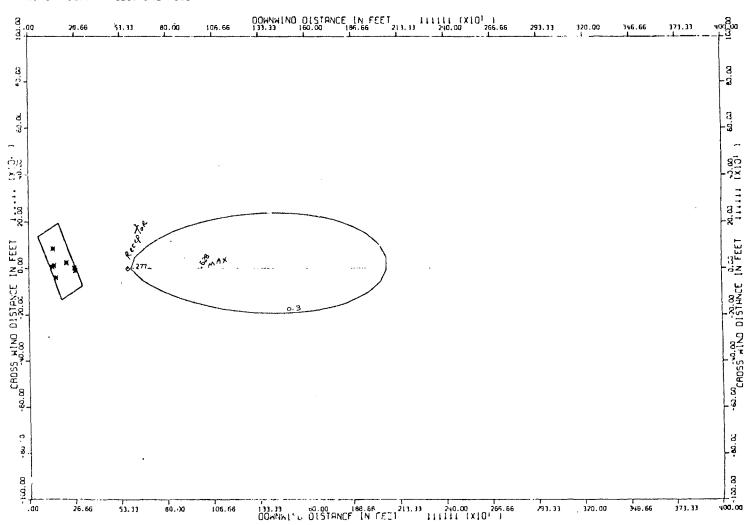


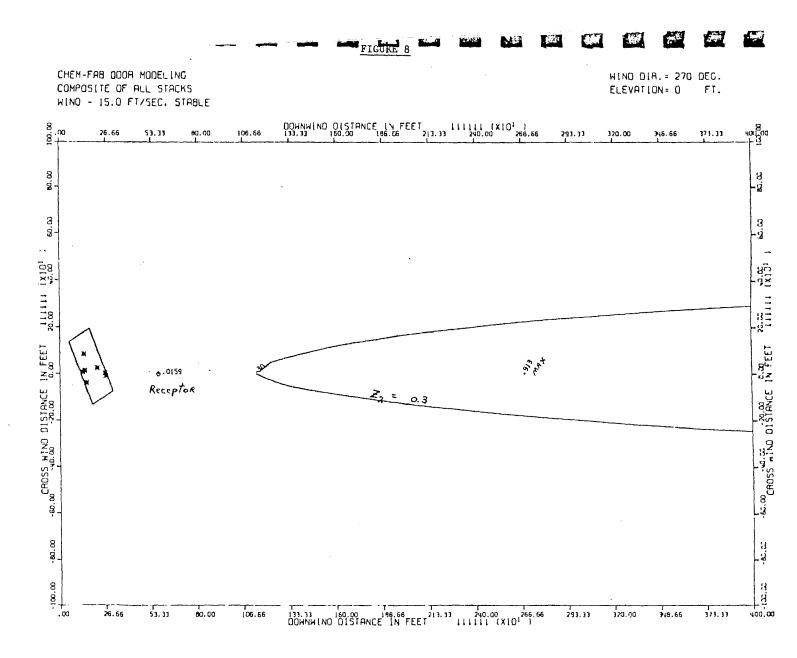
-773 - 2V

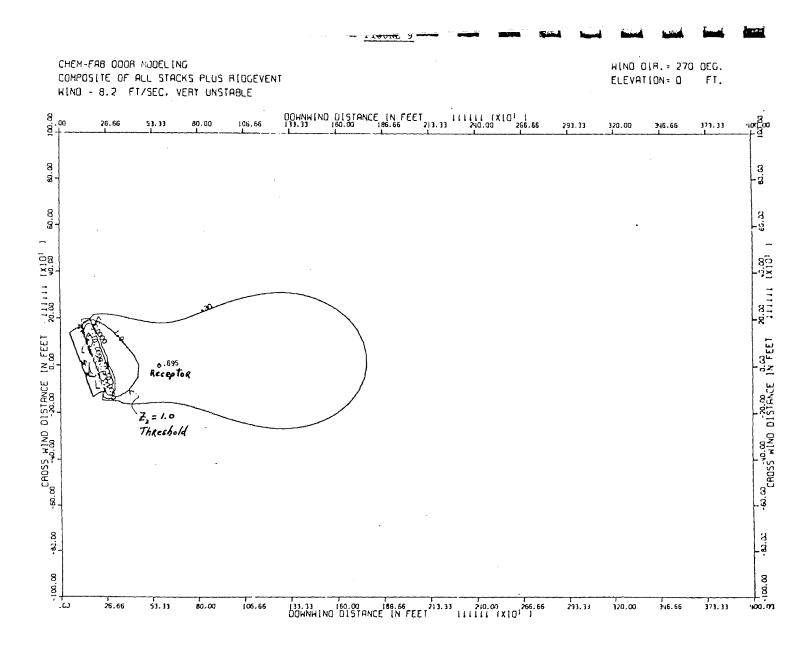




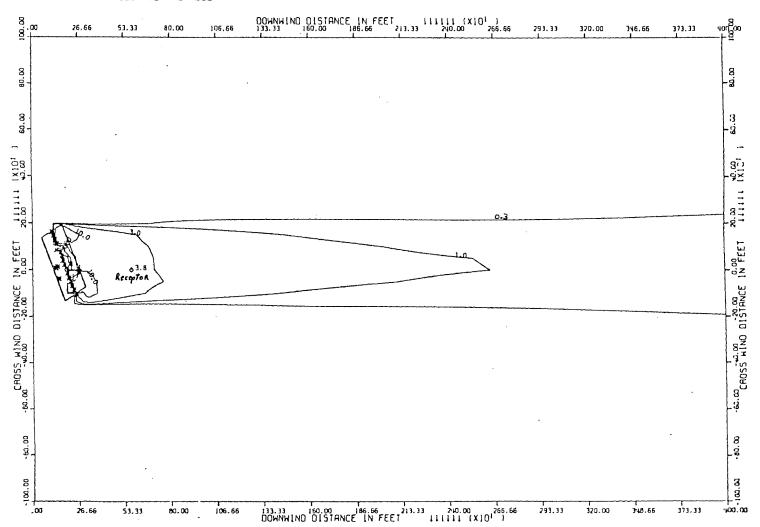
CHEM-FAB ODDR MODELING COMPOSITE OF ALL STACKS WINO - 15.0 FT/SEC. UNSTABLE WIND DIR. = 270 DEG. ELEVATION = 0 FT.

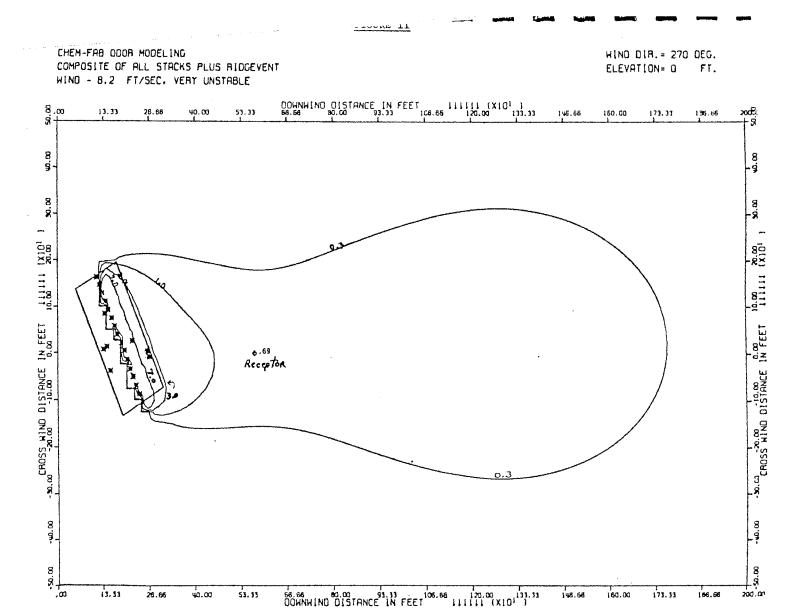


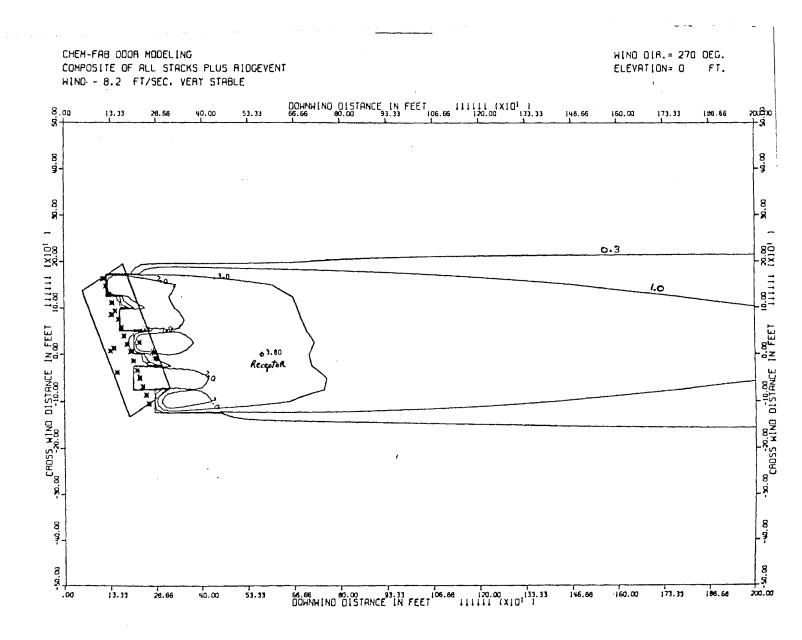




CHEM-FAB OOOR MODELING COMPOSITE OF ALL STACKS PLUS RIDGEVENT WIND - 8.2 FT/SEC. VERY STABLE WIND DIR. = 270 DEG. ELEVATION = 0 FT.







APPENDIX A

ROOFTOP MODEL OUTPUT

MASIC DATA SUMMARY STACK HEIGHT (FT) = 25.5 RTACK EXIT AREA (SQ FT) = .785 DTAL EXHAUST VOLUME (CU FT/SEC) = 12,50 STACK GAS TEMP (F) = 582.0 IN-STACK CONC = .660e+03 DONCENTRATION UNITS = FFM(VOL)
LAIN CAP STATUS = NO RAIN CAP ON VENT AREA OF UPWIND FACE OF BLDG (SQ FT) = 7500.0 REA OF UPWIND FACE OF UPWIND OBSTRUCTION (SQ FT) = Eight above Roof of Upwind Obstruction (FT) = 20.0 REIGHT ABOVE ROOF OF HIGHEST OBS. BETWEEN VENT AND INTAKE (FT) = 20.0 ISTANCE FROM UPWIND EDGE OF ROOF TO VENT (FT) = 95.0 ISTANCE FROM UPWIND EDGE OF ROOF TO UPWIND OBS (FT) = 80.0FIST FROM VENT TO INTAKE (FT) = 330.0 TOTAL DILUTION NEEDED TO MEET GOAL = 660**.0**

FEIGHT OF BLDG RECIRCULATION CAVITY = 26.0(FT) TENGTH OF BLDG RECIRCULATION CAVITY = 103.9(FT) HEIGHT OF OBS RECIRCULATION CAVITY = 8.5(FT) ENGTH OF OBS RECIRCULATION CAVITY = 88.9(FT)

CHEMFAR - TOWER A

CAUTION STACK MAY BE IN BLDG RECIRC, ZONE PLEASE CHECK SKETCH **CAUTION** STACK MAY BE IN OBS.RECIRC.ZONE - PLEASE CHECK SKETCH **KISTING STACK IS ADEQUATE TO MEET 1-HR CONC.GOAL

]	WIND SPEED (FT/SEC)	MINIMUM DILUTION BY WIND	PLUME RISE (FT)	MINIMUM DILUTION BY STACK	TOTAL MINIMUM DILUTION
	3,0 8,2 15,0	29 5 3,9 7957.0 14470.6	31.3 11.5 6.3	1.2 1.0 1.0	3605.5 8255.3 14639.3
!	28,2 32,2 42,0	22308.4 30899.9 40247.2	3.7 1.9	1,0	22502.1 31046.4 40365.7

RITICAL WIND SPEED = 1.7 (FT/SEC)

IN. DIL. BY WIND AT CRITICAL WIND SPEED = 874.0

N. DIL. BY STACK AT CRITICAL WIND SPEED = 1.8

IN. TOTAL DIL. AT CRITICAL WIND SPEED = 1538.1

```
CHEMFAB - TOWER B, C, D
#ABIC DATA SUMMARY
STACK HEIGHT (FT) = 16.0
TACK EXIT AREA (BQ FT) = 1.400
STAL EXHAUST VOLUME (CU FT/SEC) = 55,10
STACK GAS TEMP (F) = 437.0
7.V-STACK CONC = .210e+04
ONCENTRATION UNITS = PPM(VOL)
AIN CAP STATUS = NO RAIN CAP ON VENT
AREA OF UPWIND FACE OF BLDG (BQ FT) = 7500.0
                                                         . C
TREA OF UPWIND FACE OF UPWIND DESTRUCTION (SQ FT) = .
leight above roof of upwind destruction (FT) = -.0
EIGHT ABOVE ROOF OF HIGHEST OBS. BETWEEN VENT AND INTAKE (FT) = .0
ISTANCE FROM UPWIND EDGE OF ROOF TO VENT (FT) = 125.0
ISTANCE FROM UPWIND EDGE OF ROOF TO UPWIND OBS (FT) =
IST FROM VENT TO INTAKE (FT) = 800.0
OTAL DILUTION NEEDED TO MEET GOAL =
                                       2100.0
```

EIGHT OF BLDG RECIRCULATION CAVITY = 26.0(FT) ENGTH OF BLDG RECIRCULATION CAVITY = 103.9(FT) EIGHT OF OBS RECIRCULATION CAVITY = .0(FT) ENGTH OF OBS RECIRCULATION CAVITY = .0(FT)

'ACK IS NOT IN BUILDING RECIRC. ZONE 'ACK IS NOT IN OBSTRUCTION RECIRC. ZONE

WIND	MINIMUM	PLUME	MINIMUM	TOTAL
SPEED	DILUTION	RISE	DILUTION	MINIMUM
(FT/SEC)	BY WIND	(FT)	BY STACK	DILUTION
3.0 8.2 15.0 23.2 82.2 42.0	580.8 1536.0 2772.5 4256.2 5880.0 7644.7	88.9 32.5, 17.8 11.5 8.3 6.4	9.0 1.5 1.3 1.2 1.1	5205.6 2455.7 3480.3 4948.2 6613.0 8444.7

TICAL WIND SPEED = 5.3 (FT/SEC)

- , DIL. BY WIND AT CRITICAL WIND SPEED = 603.5
- . DIL. BY STACK AT CRITICAL WIND SPEED = 2.4
- . TOTAL DIL. AT CRITICAL WIND SPEED = 1440.1

```
CHEMFAS - TOWER E
BASIC DATA BUMMARY
STACK HEIGHT (FT) = 25.5
ETACK EXIT AREA (SQ FT) = 4.910
TOTAL EXHAUST VOLUME (CU FT/SEC) = 135.30
STACK GAS TEMP (F) = 544.0
IN-STACK CONC = .320e+04
ENCENTRATION UNITS = FPM(VOL)
AIN CAP STATUS = NO RAIN CAP ON VENT
AREA OF UPWIND FACE OF BLDG (SQ FT) = 7500.0
REA OF UPWIND FACE OF UPWIND OBSTRUCTION (SQ FT) =
                                                         . 0
JEIGHT ABOVE ROOF OF UPWIND OBSTRUCTION (FT) = .0
REIGHT ABOVE ROOF OF HIGHEST OBS. BETWEEN VENT AND INTAKE (FT) = .0
gistance from upwind edge of Roof to Vent (FT) = 125.0
ISTANCE FROM UPWIND EDGE OF ROOF TO UPWIND OBS (FT) =
f_{\text{IST}} from vent to intake (FT) = 300.0
TOTAL DILUTION NEEDED TO MEET GOAL =
```

FIGHT OF BLDG RECIRCULATION CAVITY = 25.0(FT) ENOTH OF BLDG RECIRCULATION CAVITY = 103.3(FT) HEIGHT OF UBS RECIRCULATION CAVITY = .0(FT) ENOTH OF OBS RECIRCULATION CAVITY = .0(FT)

TACK IS NOT IN BUILDING RECIRC. ZONE STACK IS NOT IN OBSTRUCTION RECIRC. ZONE

WIND SPEED (FT/SEC)	MINIMUM DILUTION BY WIND	PLUME RISE (FT)	MINIMUM DILUTION BY STACK	TOTAL MINIMUM DILUTION
3.0	251.9	128.6	113.2	28451.8
8.2	653.0	47.0	2.9	1862.9
15.0	1170,3	25.7	1.7	1973.5
23.2	1789,4	15.6	1.4	2543.2
32.2	2465,8	12.0	1.3	3262,1
42.0	320 0.2	7.8	1.2	3931.6

RITICAL WIND SPEED = 7.6 (FT/SEC)
IN. DIL. BY WIND AT CRITICAL WIND SPEED = 382.0
IN. DIL. BY STACK AT CRITICAL WIND SPEED = 5.1

IN. TOTAL DIL, AT CRITICAL WIND SPEED = 1035.5

```
型ABIC DATA BUMMARY
STACK HEIGHT (FT) = 28.0
STACK EXIT AREA (50 FT) = 4.910
TOTAL EXHAUST VOLUME (CU FT/SEC) = 117.80
ETACK GAS TEMP (F) = 584.0
N-STACK CONC = .820e+04
EONCENTRATION UNITS = PFM(VOL)
RAIN CAP STATUS = NO RAIN CAP ON VENT
AREA OF UPWIND FACE OF BLDG (SQ FT) = 7500.0
REA OF UPWIND FACE OF UPWIND OBSTRUCTION (SQ FT) =
FEIGHT ABOVE ROOF OF UPWIND OBSTRUCTION (FT) = 20.0
HEIGHT ABOVE ROOF OF HIGHEST OBS. BETWEEN VENT AND INTAKE (FT) = 20.0
DISTANCE FROM UPWIND EDGE OF ROOF TO VENT (FT) = 35.0
JISTANCE FROM UPWIND EDGE OF ROOF TO UPWIND OBS (FT) = 80.0
DIST FROM VENT TO INTAKE (FT) = 400.0
'OTAL DILUTION NEEDED TO MEET GOAL =
```

```
EIGHT OF BLDG RECIRCULATION CAVITY = 26.0(FT)
ENGTH OF BLDG RECIRCULATION CAVITY = 109.9(FT)
EIGHT OF OBS RECIRCULATION CAVITY = 8.5(FT)
ENGTH OF OBS RECIRCULATION CAVITY = 88.9(FT)
```

CHEMFAR - TOWER G

TACK 18 NOT IN BUILDING RECIRC. ZONE + PLEASE CHECK SKETCH + CAUTION** STACK MAY BE IN OBS.REGIRC.ZONE - PLEASE CHECK SKETCH

WIND SPEED (FT/SEC)	MINIMUM DILUTION DV WIND	PLUME RISE (FT)	MINIMUM DILUTION BY STACK	TOTAL MINIMUM DILUTION
3.0	486.9	118.2	5.0	2896.9
2.2	1283.5	43,2	1,3	1722.3
15.0	2313.9	23.6	1.1	2588.4
23.2	3549,7	15.3	. 1,1	3771.9
32.2	4901.2	10.8	1.0	5100,8
42.0	5370,9	5.6	1.0	5524,2

```
TICAL WIND SPEED = 5.2 (FT/SEC)

1. DIL. BY WIND AT CRITICAL WIND SPEED = 436.2

1. DIL. BY STACK AT CRITICAL WIND SPEED = 1.9

1. TOTAL DIL. AT CRITICAL WIND SPEED = 816.2
```

```
CHEMFAE - TOWER J
BASIC DATA SUMMARY
STACK HEIGHT (FT) =
STACK EXIT AREA (50 FT) = .785
 GTAL EXHAUST VOLUME (CU FT/SEC) = 17.20
STACK GAS TEMP (F) = 481.0
IN-STACK CONC = .210e+04
JONGENTRATION UNITS = FPM(VOL)
AAIN CAP STATUS = NO RAIN CAP ON VENT
AREA OF UPWIND FACE OF BLDG (BG FT) = 7500.0
TREA OF UPWIND FACE OF UPWIND OBSTRUCTION (SQ FT) =
BEIGHT ABOVE ROOF OF UPWIND OBSTRUCTION (FT) = 20.0
HEIGHT ABOVE ROOF OF HIGHEST OBS, BETWEEN VENT AND INTAKE (FT) = 20.0
ISTANCE FROM UPWIND EDGE OF ROOF TO VENT (FT) = 12.0
ISTANCE FROM UPWIND EDGE OF ROOF TO UPWIND OBS (FT) = 80.0
Sist from vent to intake (FT) = 420.0
TOTAL DILUTION NEEDED TO MEET GOAL =
                                       2100.0
```

```
TEIGHT OF BLDG RECIRCULATION CAVITY = 26.0(FT).

LENGTH OF BLDG RECIRCULATION CAVITY = 103.9(FT)

HEIGHT OF OBS RECIRCULATION CAVITY = 8.5(FT)

LENGTH OF OBS RECIRCULATION CAVITY = 33.9(FT)
```

CAUTION STACK MAY BE IN BLDG RECIRC, ZONE PLEASE CHECK SKETCH **CAUTION** STACK MAY BE IN OBS.RECIRC.ZONE - PLEASE CHECK SKETCH

WIND SPEED (FT/BEC)	MINIMUM DILUTION BY WIND	PLUME RISE (FT)	MINIMUM DILUTION BY STACK	TOTAL MINIMUM DILUTION
3.0 8.2 15.0 23.2 32.2	3467.3 9350.6 17012.7 26234.0 36343.1	38.1 13.9 7.6 4.9 2.9	1.1 1.0 1.0 1.0	3692.2 9351.1 17066.8 25417.4 36736.2
52.2 42.0	47342.2	1.5	1.0	48001.8

```
FRITICAL WIND SPEED = 1.6 (FT/SEC)
IN. DIL. BY WIND AT CRITICAL WIND SPEED = 1103.8
IN. DIL. BY STACK AT CRITICAL WIND SPEED = 1.4
IN. TOTAL DIL. AT CRITICAL WIND SPEED = 1584.6
```

```
CHEMFAR - TOWER K
NASIC DATA SUMMARY
STACK HEIGHT (FT) = 3.8
PTACK EXIT AREA (50 FT) = 1.070
GTAL EXHAUST VOLUME (CU FT/SEC) = 17.20
STACK CAS TEMP (F) = 520.0
N-STACK CONC = .320e+03
SACENTRATION UNITS = PPM(VOL)
RAIN CAP STATUS = NO RAIN CAP ON VENT
AMEA OF UPWIND FACE OF BLDG (SQ FT) = 7500.0
REA OF UPWIND FACE OF UPWIND QESTRUCTION (SQ FT) =
leight above goof of upwind obstruction (FT) = 20.0
HEIGHT ABOVE ROOF OF HIGHEST OBS. BETWEEN VENT AND INTAKE (FT) = 20.0
ISTANCE FROM UPWIND EDGE OF ROOF TO VENT (FT) = 22.0
ISTANCE FROM UPWIND EDGE OF ROOF TO UPWIND OBS (FT) = 80,0
)IST FROM VENT TO INTAKE (FT) = 410.0
OTAL DILUTION NEEDED TO MEET GOAL =
```

HEIGHT OF BLDG RECIRCULATION CAVITY = 26.0(FT) HEIGHT OF BLDG RECIRCULATION CAVITY = 103.9(FT) HEIGHT OF DES RECIRCULATION CAVITY = 8.5(FT) ENGTH OF OBS RECIRCULATION CAVITY = 38.9(FT)

*CAUTION** STACK MAY BE IN BLDG RECIRC. ZONE PLEASE CHECK SKETCH *CAUTION** STACK MAY BE IN OBS.RECIRC.ZONE - PLEASE CHECK SKETCH XISTING STACK IS ADEQUATE TO MEET 1-HR CONC GOAL

WIND	MINIMUM	PLUME	MINIMUM	TOTAL
SPEED	DILUTION	RISE	DILUTION	MINIMUM
(FT/SEC)	BY WIND	(FT)	BY STACK	DILUTION
3.0 8.2 15,0 23.2 32.2 42.0	33 05.9 8915.2 16218.3 25007.2 34641.9 45124.8	34.7 12.7 6.9 4.0 1.9	1.1 1.0 1.0 1.0 1.0	3507.4 8917.3 16249.8 25146.3 34964.0 45665.8

MITICAL WIND SPEED = 1.5 (FT/SEC)

N. DIL. BY WIND AT CRITICAL WIND SPEED = 928.1

N. DIL. BY STACK AT CRITICAL WIND SPEED = 1.4

N. TOTAL DIL. AT CRITICAL WIND SPEED = 1316.8

TACK HEIGHT (FT) = 15.8TACK EXIT AREA (BQ FT) = 1,400 STAL EXHAUST VOLUME (CU FT/SEC) = 53.80 TACK CAS TEMP (F) = 574.0N-STACK CONC = .550e+03ONCENTRATION UNITS = FPM(VOL) AIN CAP STATUS = NO RAIN CAP ON VENT REA OF UPWIND FACE OF BLDG (SQ FT) = 7500.0 REA OF UPWIND FACE OF UPWIND OBSTRUCTION (SQ FT) = EIGHT ABOVE ROOF OF UPWIND OBSTRUCTION (FT) = 20.0 EIGHT ABOVE ROOF OF HIGHEST OBS, BETWEEN VENT AND INTAKE (FT) = 20.0 ISTANCE FROM UPWIND EDGE OF ROOF TO VENT (FT) = 10.0 ISTANCE FROM UPWIND EDGE OF ROOF TO UPWIND OBS (FT) = 90.0 IST FROM VENT TO INTAKE (FT) = 425.0 OTAL DILUTION NEEDED TO MEET GOAL = 660.0

EIGHT OF BLDG RECIRCULATION CAVITY = 26.0(FT) ENGTH OF BLDG RECIRCULATION CAVITY = 103.9(FT) EIGHT OF 088 RECIRCULATION CAVITY = 5.0(FT) ENGTH OF 088 RECIRCULATION CAVITY = 24.0(FT)

HEMFAE - TOWER M ABIC DATA SUMMARY

*CAUTION** STACK MAY BE IN BLDG RECIRC. ZONE FLEASE CHECK SKETCH *CAUTION** STACK MAY BE IN OBS.RECIRC.ZONE - PLEASE CHECK SKETCH XISTING STACK IS ADEQUATE TO MEET 1-HR CONC GOAL

WIND	MINIMUM	PLUME	MINIMUM	TOTAL
SPEED	DILUTION	RISE	DILUTION	MINIMUM
(FT/SEC)	BY WIND	(FT)	BY STACK	DILUTION
3.0 8.2 15.0 23.2 32.2 42.0	1154.1 3108.5 5633.3 8667.5 11990.8 15604.6	100,1 36.6 20.0 12.9 9.3 7.1	2.4 1.1 1.0 1.0 1.0	2792.5 3407.5 5741.1 8706.7 12002.4 15605.0

RITICAL WIND SPEED = 4.2 (FT/SEC)

IN. DIL. BY WIND AT CRITICAL WIND SPEED = 843.9

IN. DIL. BY STACK AT CRITICAL WIND SPEED = 1.5

IN. TOTAL DIL. AT CRITICAL WIND SPEED = 1275.7

DATA BORRARY

ENGTH OF *CAUTION** STACK MAY BE BLDG RECIRCULATION CAVITY = ELDG RECIRCULATION CAVITY = OBS RECIRCULATION CAVITY = IN BLDC RECIRC, ZONE -: 26.0(FT) : 108.5(FT) : 5.5(FT) : 33.9(FT) PLEASE CHECK

(FI/SEC) GNIM AE NOILOTIC MONINIW FIUME (FT) MINIMUM DILUTION BY STACK TOTAL MINIMUM DILUTION 977775 97777 98977 9997 9997 9977

RITICAL WIND SPEED =
N. DIL. BY WIND AT CH
N. DIL. BY STACK AT CHI
N. TOTAL DIL. AT CRIT

DIL. BY WIND AT CRITICAL WIND SPEED : DIL. BY STACK AT CRITICAL WIND SPEED := TOTAL DIL. AT CRITICAL WIND SPEED :=

5 (FT/SEC)

11

11

₩ ₩ ₩

```
chemias - hissavant
ASIC DATA SUMMARY
 STACK HEIGHT (FT) = 1.5
 STACK EXIT AREA (SC FT) = *****
FOTAL EXHAUST VOLUME (CU FT/SEC) = 148.30
 STACK GAE TEMP (F) = 124.0
 in-Etack conc = ,650e+03
DINCENTRATION UNITS = FPM(VOL)
AIN CAF STATUS = NO RAIN CAP ON VENT
 AREA OF UPWIND FACE OF BLDG (SQ FT) =
AMERIA OF UPWIND FACE OF UPWIND OBSTRUCTION (5Q FT) =
______ ABOVE ROOF OF UPWIND OBSTRUCTION (FT) = → C
 HEIGHT ABOVE ROOF OF HIGHEST OBS. BETWEEN VENT AND INTAKE (FT. = -
DISTANCE FROM UPWIND EDGE OF ROOF TO VENT (FT) = 65.0
DISTANCE FROM UPWIND EDGE OF ROOF TO UPWIND OBS (FT) =
 DIST FROM VENT TO INTAKE (FT) = 365.0
 TOTAL DILUTION NEEDED TO MEET GOAL =
                                         660.0
```

```
THEIGHT OF BLDG RECIRCULATION CAVITY = 25.0(FT)
LENGTH OF BLDG RECIRCULATION CAVITY = 108.9(FT)
HEIGHT OF OBS RECIRCULATION CAVITY = .0(FT)
LENGTH OF OBS RECIRCULATION CAVITY = .0(FT)
```

_**CAUTION** STACK MAY BE IN BLDG RECIRC, ZONE PLEASE CHECK SKETCH STACK IS NOT IN OBSTRUCTION RECIRC, ZONE

	WIND	MINIMUM	PLUME	MINIMUM	TOTAL
	SFEED	DILUTION	RISE	DILUTION	MINIMUM
	(FT/SEC)	BY WIND	(FT)	BY STACK	DILUTION
-	3,0	33 9. 6	-41.5	1.3	421.7
ور ن	8.2	888.8	-52.5	1.4	1250.9
	:5.0	1597.6	-55.3	1.5	2358.9
~	25.2	2446.8	-55,5	1.5	3677.3
	82,2	5375.2	-57,i	1,5	5119.7
1	42.0	4383.6	-57.5	1,5	6686.6

```
PRITICAL WIND SPEED = .5 (FT/SEC)

IN. DIL, BY WIND AT CRITICAL WIND SPEED = 60.7

MIN. DIL. BY STACK AT CRITICAL WIND SPEED = 1.3

MIN. TOTAL DIL, AT CRITICAL WIND SPEED = 73.5
```

3

1

11.76

1

表記

1

APPENDIX B

"STACKA" MODEL OUTPUT

			DOR HODELING OF-ALL STACKS .					
				· · · · · · · · · · · · · · · · · · ·				
				HISC	DATA		per Militar impera e simp graphy ny isa isa ao ao ao ao ao ao a	
		INITIAL	ACTUAL NIND	D110505 10H	STABILITY	AMRTENT	TIME	INVERSIO
	WIND SPEED	DIRECTION	DIRECTION	EQUATION	CLASS	TEMPERATURE	THANTEULDA	LAYER
	!FT/SEC1	(DEG)	(DEG)	IEQUA	ICLASS	_ (DEG_F)	FACTOR	ELEVIFT
	15.00	270.0	•0	GIFFORD		70.0	1.0000	.000
······································	13 • DA	27040						
	MIN.	HAX. DOWNWIND	MIN. CROSSUIND	CRIW22OF3	NO. OF	ND.OF Crosswind	PLOTTED OUTPUT	NOATE LOCATIONS
	DISTANCE	DISTANCE	DISTANCE	DISTANCE	INCREMENTS	INCREMENTS	DESTRED	PLOTTED?
	JEIL	(F.I)	(FI)	· (FI)		NY	NPLOT	NLDC
	. 0	4000.0	~2000.0	2000.0	91	11		٠ ۵
								ū
			· · · · · · · · · · · · · · · · · · ·					
		NO. OF	ND. 0F	NO. OF AXIS	NO. OF CONC. LEVELS	NO. OF RECEPTOR	NO. OF LINE	
		STACKS	INCREMENTS	SHIFTS	SUPPLIED	PDINTS	COORDINATES	
		NOS	N X	NSH1FT	, NC .,	RM	NL	
		7	0	1		0		
							, mark	
					. No action to the second contract of the			
					•			
				•		•	* ** *	
•	,		A CALLES A SECURITY AND A SECURITY AS A SECU	and the second s			Carlot Calendary Mr. Spring Co. Carlot Calendary Carlot Calendary	
					•			
	•				•			

CHEM-FAB ODOR MODELING COMPOSITE OF ALL STACKS											
STACK DATA								RECEPTOR POINT DATA			
	NO.	FROM REF.	CROSSWIND DISTANCE FROM REF.	RATE.OF POLLUTANT	STACK_	FICATION			RECEPTOR POINT NO.	DISTANCE FROM REF.	CROSSWIND DISTANCE FROM REF. (FT)
, ,,	1 2 3 4	216.0 260.0 266.0 136.0	26.0 4.0 -8.0 86.0	8.3000+03 1.1600+01 _4.2600+01 3.7700+01 _3.6000+02	TOWER TOWER Tower	1 A 1 B,C,D 1 E 2 G					
	6 7	142.D 152.D	14.0 -38.0	6.0000-03 3.6000-02	TOWER	R K					
	- ·	remain the second of the complete second beautiful.	C					THE REST OF AMERICAN VICTOR			
					· · · · · · · · · · · · · · · · · · ·						
									to the same of the same state		
									A PLANE I MANAGEMENT AND AND THE		
								Change of Court and Assembly and Courts			
											•
		,									

			ODDR MODE TE OF ALL S	LING TACKS					-	
					STACK DATA	(CONT.)				
STACK NO.	STACK	STACK TEMP. (DEG F)	STACK	FLOW AT70. DEG .F	MOLECULAR WEIGHT OF GAS	HEAT RELEASE OR BUILD HEIGHT	STUMKE OR BUILD WIDTH OR HEIGHT	PLUME RISE EQUATION USED	VOLUMETRIC FLOW AT AMB. TEMP. (CU.FT./SEC)	GAS EXIT VELOCIT (FT/SEC
1 2 3 4 5 6	47.50 39.00 48.50 52.00 29.80 32.80	582.00 437.00 544.00 584.00 461.00 520.00	1.00 1.33 2.50 2.50 1.00 1.17	133.30	29.10 29.10 29.10 29.10 29.10 29.10 29.10	300.00 300.00 300.00 300.00 300.00 300.00	25.00 25.00 25.00 25.00 25.00 25.00	B-DOWN B-DOWN B-DOWN B-DOWN	12.50 55.10 133.30 117.80 17.20 17.20 53.80	31.29 67.12 51.49 47.27 38.06 29.58 75.55
										···
	TAVIANT NAME ()		***************************************							
							100 00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0			
			** ****** * * *	** *						
									.,	
									<u></u>	

			HEM-FAB OMPOSITE			•		***	 	 		
EFFECTIV	E STACK H	EIGHT DA	TA									
STACK	3.0 FPS	B.2 FPS	15.D FPS	23.2 FPS	32.2_	FPS						
1 2	135.1	77.6 94.2	62.6	56.2	52.9 50.1	51.0 46.6			 	 	••••	
· 3·	276.3	127.1	88.1	71,4	62.9	57.B	· · · · · · · · · · · · · · · · · · ·		 	 		
4	270.7 123.0	127.3	89.7 46.0	73.B	65.6 35.8	33.7			 	 	- · · ·	
6	125.0	64.9	48.8	41.9	38.4					 		
7	212.6	98.6	68.8	56.1	49.6	45.7						
HUHIKAH	CONCENTRA	TIDN DAT	A									
			-									
1017101	AL STACKS	. A1 ALL	WIND SPE	.EUS		,						
STACK			15.0				and the transfer of the second of			 		
NV.	773	, FP3.	FPS	, FFS	. "rra							
1	1.29-02	1.72-02	1.56-02	1.30-02	1.07-D2	9.00-03			 	 		
2			1.83-D1 3.60-01					•				
4			3.04-01				,		 	 		
-			1.39-01						 			
5			2.02-02									
6		4.フナーハフ		3000					 			
6	1.93-02	4.27-02	, , , , , , , , , , , , , , , , , , , ,									
6 7 OISTANCI	1.93-02 E DOWNVIN	DF HAX	THUH CONC				The state of the s			 		
6 7 01STANC	1.93-02 E DOWNVINI UAL STACK	DF HAX	THUH CONC	EOS					 			
6 7 0151ANC	1.93-02 E DOWNVINI UAL STACK	DF HAX	THUH CONC	EOS					 			
6 7 DISTANC	1.93-02 E DOWNVINI UAL STACK	DF MAX	MIND SPE	EOS					 	 		•
6 7 DISTANC	1.93-02 E DOWNVINI UAL STACK	DF MAX	MIND SPE	EOS					 	 		•
6 7 01STANCI INDIVID: STACK, NO.	1.93-02 E DOWNWINI UAL STACK	B +2 FPS	INUM CONC WIND SPE 15.0 FPS	23.2 FPS	32.2 FPS	42.0 FPS			 	 		•
7 OISTANC	1.93-02 E DOWNWINI UAL STACK 3.0 FPS 4947.1 8561.5	8.2 FPS 2207.8	15.0 FPS 1614.0	23.2 FPS 1379.3 1369.4	32.2 FPS 1263.9 1165.9	42.0 FPS 1196.0 1048.5			 			
6 7 01STANCI INDIVID: STACK, NO.	1.93-02 E DOWNWINI UAL STACK 3.D FPS 4947.1 8561.5 13200.0	8.2 FPS 2207.8 2926.8 4526.4	15.0 FPS 1614.0 1795.8 2652.5	23.2 FPS 1379.3 1369.4	32.2 FPS 1263.9 1165.9 1625.5	42.0 FPS 1196.0 1048.5 1436.7						
6 7 01STANCI INDIVID: STACK, NO.	1.93-02 E DOWNWINI UAL STACK 3.D FPS 4947.1 8561.5 13200.0	8.2 FPS 2207.8 2926.8 4526.4 4536.0	15.0 FPS 1614.0 1795.8 2652.5 2726.9	23.2 FPS 1379.3 1369.4 1955.3	32.2 FPS 1263.9 1165.5 1726.5	42.0 FPS 1196.0 1048.5 1436.7 1541.1	· · · · · · · · · · · · · · · · · · ·					
6 7 01STANCI INDIVID: STACK, NO.	1.93-02 E DOWNWINI UAL STACK 3.0 FPS 4947.1 8561.5 13200.0 4318.6	8.2 FPS 2207.8 2926.8 4526.4 4536.0 1591.4	15.D FPS 1614.0 1795.8 2652.5 2726.9	23.2 FPS 1379.3 1369.4 1955.3 2048.8 905.5	32.2 FPS 1263.9 1165.9 1625.5 1726.5 810.8	42.0 FPS 1196.0 1048.5 1436.5 1431.1 754.6						
5 TACK NO.	1.93-02 E DOWNWINI UAL STACK 3.D FPS 4947-1 8561-5 13200-0 13200-0 4503-4	8.2 FPS 2207.8 2926.8 4526.4 4536.0 1591.4 1700.7	15.D FPS 1614.0 1795.8 2652.5 2726.9	23.2 FPS 1379.3 1369.4 1955.3 2048.8 905.5 978.3	32.2 FPS 1263.9 1165.9 1625.5 1726.5 810.8 881.2	42.0 FPS 1196.0 1048.5 1436.7 1541.1 754.6 823.6						

		CHEM-FAB COMPOSITE	ODER HODEL	ACKS		THE PARTY STATE OF THE PARTY STA				
 .	The second second second									•
			FLE	VALION			CROSSWIND SHIFT FROM REFERENCE	en e		
		HIND	A	BOVE	MIND	SHIFT FROM	CROSSWIND			
	error of the second second	(FI/SE	c)	(FT)	DIRECTION.	REFERENCE	REFERENCE (FT)			
							(FT)	*** * * *		* * * * * * * * * * * * * * * * * * * *
		15.0	·		270.0			** **		
_		STACK DI	A T A				• D			
	···			FHTSST	·····	· ···	the second of the second	* ***		
٠ ا	DOWNHIND	CROSSWIND DISTANCE FROM REF.	EFFECTIVE	RATE_DF	STACK		the street of the street of the street	REC	EPTOR POINT	
ACK	FROM REF.	FROM REF.	HEIGHT	POLLUTANT 	IDENTIFICAT	ION		RECEPTOR	DOWNUTHO	
	1F11			0.3000-07	TOUR TIPICAT	1 to		NO.	DISTANCE	CROSSUE
	216.0	26 • U • • D	67.37	1.1600-01	TOWER			*****	FROM REF.	DISTANCE FROM REF.
2 3	266.0			4.2600-01_ 3.7700-01	TOWER G	· · · · · · · · · · · · · · · · · · ·				(FI)
4 5	136.0 132.0	8.0 14.0		3.600D-02 6.0000-03	. TOWER J	_				
6	192.0 152.0	-		3.6000-02	TOWER K Tower M	•				
7	122.0									
					•	••				
							•	·,		
		2 2 - 2 - 2 - 2								
							0.4			
			. where is a common							
	, .						•			
							•			
					•					
			****			•	territoria de la companya della companya della companya della companya de la companya de la companya della comp			
								-		- 1
× 400			,,							- 1
		,			•					1
										- 1

CONTRIBUTION 10 10 10 10 10 10 10 1		MAXIMU	M CONCENTRATION				
STACK				LUATA		Care the state and a second	
NO. CONCENTRATION CONTRIBUTION STACK 1 1.2861-02 .01408 2 1.5729-01 .18319 TOWER A 3 3.5583-01 .38965 TOWER B, C, D 4 2.8463-01 .38965 TOWER B, C, D 5 7.3686-02 .08069 TOWER G 6 1.1798-02 .01292 TOWER G 7 4.7102-02 .01292 TOWER M DOWNWIND CROSSWIND TOWER M DISTANCE DISTANCE FROM REF. CONCENTRATION STABILLTY 2700.00 .00 9.1319-01		TO					
1 1.2861-02 .01408 2 1,5729-01 .18319 TOWER A 3 3.5583-01 .38965 TOWER B, C, D 4 2.9463-01 .25788 TOWER E 5 1.3686-02 .08069 TOWER G 6 1.1798-02 .01292 TOWER J 7 1.7102-02 .01292 TOWER K TOWER K TOWER K DOWNWIND CROSSWIND TOWER K DISTANCE DISTANCE FROM REF. FROM REF. CONCENTRATION STABILTY WIND GET LETT. (FT) (CONCENTRATION STAB		MAXIMUM CONCENTRATION	RELATIVE				
2 1,5729-1118319 TOMER A 3 3.5583-0118319 TOMER B, C, D 4 2.9463-0126788 TOWER E 5 7.3686-0208069 TOMER G 6 1.1798-0201292 TOMER J 7 9.7102-0201292 TOMER K TOWER M DOWNWIND CROSSWIND TOWER M DISTANCE QISTANCE MAXIMUM FROM REF. FROM REF. CONCENTRATION TRABILITY WINESPEED 2700-0000 9.1319-01		TON	CONTRIBUTION	STACK			
2 1,5729-01 .18319 TOMER A 3 3.5583-01 .38965 JOMER B,C,D 4 2.9463-01 .25788 TOMER E 5 7.3686-02 .08069 TOMER G 6 1.1796-02 .01292 TOMER J 7 4.7102-02 .05158 JOMER K DOWNWIND CROSSMIND DISTANCE DISTANCE MAXIMUM FROM REF. FROM REF. CONCENTRATION STABILITY WINDSTREED 2700-00 .00 9.1319-01		1.2861-02		- SECONTE	CATION		
1		1,5729-01	18319	TONED			~ ~
OBOGO 1.1798-02 ODER J 1.179		2.9463-01	AROLE	- IONED	C.O		
DOWN-IND CROSSWIND DISTANCE DISTANCE MAXIMUM FROM REF. FROM REF. CONCENTRATION STABILTY WIND STREET 2700.00 .00 9.1319-01		7.3686-02	. 118.04.0	TOUCH .		and the same of th	
DOWNWIND CROSSWIND DISTANCE DISTANCE FROM REF. FROM REF. CONCENTRATION STABILITY WINDSTREED 2700.00 .00 9.1319-01	7	4 - 71 02 - 02	•012e2				•
DISTANCE DISTANCE MAXIMUM FROM REF. FROM REF. CONCENTRATION STABILTRY WINDSPEED 2700.00 .00 9.1319-01		DOWNWIND C		TOWER H			• • • •
2700.00 .00 9.1319-01		DISTANCE	1211000	the second second second second second			
2700.00 .00 9.1319-01		(ET)	ROM REF. CONCE	ENTRATER		tayan ayan	
2700.00 .00 9.1319-01			and the second of the second	77110N	STABILITY.		٠.
		2700.00			the same of the same of	WINDSpeed	
15.0 fps	The second secon		7.13	19-01		mark the same	·
	Company of the second of the s				3		• • •
				real and a second and an area		Tos .	
			The second secon		Company of the contract of the		
			** *** *** *** *** *** *** *** *** ***			•	•
	The second secon			•			
	, i company of the co			•••		The same and the s	

					The same of the sa		
	,		•	•			
and summarized the first of the second secon	- · · · · · · · · · · · · · · · · · · ·	or every end of the second			-,		
the state of the s			**		* **		
			•	****			
				~		*	1
				•.		•	- 1
							- 1
	, — — — — — — — — — — — — — — — — — — —						

	•00 •									1 1 1 1									; ; ; ; ; ; ;									: : : : : :							
	C 40 7 2		· .	1					•	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1									* * * * * * * * * * * * * * * * * * *																
			:		:														6 6 3 6 6 6						•			*							
The state of the s	= 9 URO	-				•		•••					ì												:			: ! ! ! !							
	-900-		And I are the second of the se				•			8 9 8 9 1 8 8			:	;				•										 	•					•	
	CVD S =									\$ \$ \$ \$ 1						**												† † † † †							
(15.0 60)	-800. 2000.	CAD		\circ	000	2 0		0	000	1	0	600.	> 0	0	\circ	ວ ຕ	0	0 1	•	ם פ	000	0	0	8		o c	0		0 5	5 C	90		000.	⊃ r:	2
and the	11	Q A D		90	80	0	80	00	000			000	30	0	0 0	0 0	0	0 1		– c	000	0	0	0	- c	5 C	0		0 0	- -	0	8	000.	> c	0
2 k	CVO	Q A D	୍ 🗢 ପ	000	00	000•	0 (000	000.		0	000	30	0	8 8	0	0	0 1			000	00	0	00		0			00		00	00	. 000	30	Э
	1200.	CND	000		000	30	00	000	000	#	0	000.	00	0	000	20	000.	000.		000	000	• 000	• 000	9	000.	9	• 000			2 0		0	000	20	2
LING TACKS		CND	200	00	0 0	38	0 0		000	i		. 000	88	8		0	80			2 0	• 000	00	0	70	ر م	03	7	1 6	- 04-	90	20	0.8	. 088	2 2	2
400 E	200	CAO	a 0 c		00	00	0 0	n o	202		~	.349	4	9	2 4) (-	∞ .	- 1		F 🏲	888	9.0	90	5	-	90	0	1 6	on ac	8	9 6	40	.835	80	9
B ODOR	200.	CKD	000	0	a 0		000	0 0		11	0	000	00	0	- -		0 0	0 1		o c	.001	00	00	-		-	. 014		٦ ~	20	03	03	043	0.5	,
HEM-FA OMPOSI	1 11	3	- 0 0	9 00	00	0	000		0		00	000	00	20	200	00	000	וכ			000	0	00			00	0		00	00	00	00	000	200	,
58	C.WD 9	238	00	00	00		200	000	38	1; 11 1 (000	000	8	000		000	00	⊃ 1			000	0	000	3 2	000	000	00		000	000	00	000	000	000	,
	000	38		00	0	00	0 0	000	0	1 (0 (000	8	, 00	- -	00	0 0	7 1		, 0	00	0	88	-	000	00	-				. 00		000		
	= -201	IJ	00		900	00	8 8		• 00	 	nn nn		• 00	• 6	00	. 00	000	• 1.	00		. 00	•	•			00	. 00		• •	8		98	900		
	CHO 1.	IST CH				• 00				1 0	• 000	0. 0021	400	00	00	. 00		• •	100	200	2300 •0	• 00 •	200	, DD2	8000	• 006	• 000	001	200	300	• 00 4	500	3700 .0	900	
1)	0			:	:				•			_	. ~, •			- 11	į	10		. 7	. • (- (. •	- 1	,	. 111	,-1	. ,	. ,		,-1	,

CHEM-FAB ODDR MODELING COMPOSITE OF ALL STACKS

MAX DOWNWIND CONC. UNDER ALL METEOROLOGICAL CONDITIONS

	CND		= -2			-1600.	CND 3 =	-1200		800•	CND	5 = -u					. .	
	CND	8		800 C		1200	CHD .10 .=		CWO 11 =		CNU	5 = -41	00. CHD	6 =	٥.	CAD .	7 =	• 00 •
	DIST		CMD	CMD	CHD	CWD	CHD	CHO	CMD	CND	CHD	CND	CND					
			1	7 ,_	3 .		 \$	6	7	В	9	10	11					
	0		.000		• 00		.000	.000	.000	.000	•000	.000	• 000					
	100	-	.000		. 081				000	.000	•000	.000.	000					
	200		.000		• 00		.000	.000	•000	.000	.000	.000	.000					
	300		.000						• OOD .	.000	.000	.000		. د بیس				
	400		.000		• 00		•000	. 149	•000	• 000	•000	.000	.000					
	500 600		000		• 001			204			•000.	000	000					
			.000		• 0 0 1		.001	.311	.001	•000	.000	• 000	• 000					
*	700. 600	~	.000		• 001			• • 36, .	• D D 9	_ , 000 ,	000							
	900				• 001	· ·	•012	. 5 4 4	.029	.000	•000	.000	•000					
	1000		-000		• .DO				•058		000	000	DDO					
	1000		•000		.001		• D 5 3	.645	•D93	.001	•000	.000	•000					
		777	====															
	. 1100.		•000															
	1200		•000							002	.000	000	•000					
	1300		000					. 658	.156	.004	.000	.000	• 00 0					
	1400		.000		.00			646.		008	000	000.	•000		-			
	_1500		.000				.142	.622	.180	.012	.000	.000	•000					
	1600		.000				110 -161	,620		017		• <u>000</u>	•000					
	1700		.000					.630	.192	.024	.001	.000	.000					
	1800	•	.000		.00		187 198	•6B7	214	•033 •043	•002, •003	000	•000					
	. 1900		.000		• 002		206					.000	.000					
	2000	•	.000		.00		•209	.818	.235	052 .	.004		.000 .000					
		77.5										.000						
													•	. 7.7		•	•	
	2100		.000			5 05 2	• 206,	847	.230	.066	.008	• 000	• 000					
	2200		.000	• 000	.00		.199	.870	.220	.070	.010	.001	.000					
	2300		.000		00	9 .060		888	.208	.073	.013	.001	.000					
	2400		.000		.01	1 .062	.179	.900	.196	.074	.015	.002	.000					
	2500.		.000		• D 1 :			908	. 193	.074	.016	.002	.000					
	2600		.000		.01		.165	.912	.190	.073	.018	• DO3	.000		" ' '			
41 A.K	⊅ 2700		.000		.01			913	.185	.071	.019	.003	.000					
	2800		.000		• D 1		.171	.911	.190	.069	.021	.004	.000					
	2900		.000		+010			907	.197	.067	.021	.004	.001					
	3000		.001	.004	• D 1 (B •057	-184	•900	.202	.064	.022	.005	.001					
						*==:=====												
	3100		.001	005		n n-	• • •											
	3200		.001	.004 .005	• 01			.892	.207	• D 6 B	. 023	- 006	.001					
	3300		.001	•005	.019		.193	.882	-210	.074	.023	•006	.001					
	3400		.001		• 021		. 196 198	• 872	-212	• 079	.023	.007	.001					
	3500		.001		. 021		.198	.860	.213	.084	•023	.007	•002					
	3600		.002		.02		.199	848	.214 .214	.089	.023	•007	•002					
	3700		.002		.02		.199	.821	.213	.093 .096	.023	.008	.002					
	3800		.002		.02		•198	.808	.211	.098	•025 •028	.008 .008	.002 .002					
			_				* 4 7 0	• 000			.020	• 006	• 002					

	Case	<u>e 5:16-cv-0012</u> 5-gwc	Document 107-19	Filed 10/02/17	Page 42 of 80
4	ı				
	:				:
1					
1					
	:				
•					
03 .					
.003					
400					
1					
.030					
.102					
2009					
,					
794 780					
27					
196 195					
196					
7 0.					
260					
			,		
.025					
•					
0.7					
007					
22					
	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				
3900					
:					
i			1		

ı	Abrill	Marie Marie	Patronell Minimal Man	and Monage Manager		· · · · · · · · · · · · · · · · · · ·		ere Territoria	
	- · · · · ·		CHEM-FAB ODDI	MODELING					
		METERONI				,			
	•		LOGICAL CONDITIONS						
			STABILITY	- WIND SPEED					
				The second contract of					
	CHD	1 = -2000. 8 = 800.	CWD 2 = -1600. CWD 9 = 1200.	CMD 3 = -1200-	Cun 4	CWD 5 =		6 = 0. C)	10 7 = 400.
	DIST	CAD CE	AD CHO CHD	CMD CMD	CAD CAD		ND CND		
	D		2 3 0- 0 0- 0	. , .5	7 8	9 1	0 11	•	
		U- •0 D-	• 0 0 ~. 0)	nn nn	nn n-	.n nn		
	300	U = U U =	0 0+ 0 0+ 0) 1- 8.2 2-15.D	1-8-2 00	nn n-	.0 00		
	400	u0 u-	•D D- •O 1-8.2	1 1- 8-2 2-15-N	1- R.2 1- R.7	0 n n -	.n nn		W WA 11. 100
	600	0- •0 1-8	.D 18.218.2 3.2 1-8.2 1-8.2	! 1- B.2 7-15.0	1-8-2 1-8-2	1 - A.2 1 -	8.2 00		
		! Q=	3.2 1-8.2 1-8.2	1- 8.2 2-15.0	1- 8-2 1- 8-2	1-8-2 1-	8.2 D= .D		
	900	1=5±∏1±_8	3.2 1- 8.2 1- 8.2 1-2 1- 8.2 1- 8.2	1-8-2 3-32-2	1- 8.2 1- 8.2	1-8.7 1-	8.2 1-8.2		
	1000	1-3.0 1-8	3.2 1- B.2 1- B.2	1-8-2 3-32-2	1- A.2 1- A.2	1-8.2 1-	8.2 1- 8.2		
	1100 1200	1 - 3.0 . 1 - 3 1 - 3.0 1 - 3	3 · D · 1 · · · · · · · · · · · · · · · ·	1-8-2 3-23-2	1-8.2 1-8.2	1-8.2 1-	8.2 . 1- 8.2 .		
	1300	lm_3.0 .lm .l	1 • D1 = 8 • Z1 = 8 • 2	1- 8.2 3-23.2	1-8.2 1-8.2	1-8.2 1-	8.2 1- 8.2		
	1500	1- 3.0 1- 3 1- 3.0 1- 3	3.0 1- 8.2 1- 8.2 3.0 1- 3.0 1- 8.2	! 1- 8.2 3-23.2 ! 1- 8.2 3-15.0	1-8.2 1-8.2	1-8-2 1-	8.2 1- 8.2 8.2 1- 8.2		
	1000	1- 3-0 1- 3	3+D 1- 3.D 1- 3.C	1- 3.0 5-15.0	1- 3.0 1- 3.0	1- 3.0 1-	3.0 1- 3.0		
	1900	1-3.0 1-3	3.0 1- 3.0 1- 3.0 3.0 1- 3.0 1- 3.0)1+_3.0_,5-15.0. 1+_3.0_5-15.0	1- 3.0 1- 3.0	1-3.0 1-	3.0 1- 3.0 3.0 1- 3.0		
	_ 1900	1- 3.0 1- 3	3.0 1-3.0 1- 3.0	1-3.0 5-15.0	1- 3-D 1- 3-D	1- 3.0 1-	3.0 1-3.0		
			3.0 1-3.0 1-3.0	1-3.0 5-15.0	1-3,0 1-3.0	1- 3.0 1-	3.0 1-3.0		
	2100								
	2200	1-3-0 1-3	3.0 .1- 3.0 .1- 3.0 3.0 1- 3.0 1- 3.0	1 1- 3.0 5-15.0	1- 3.0 1- 3.3	1-3.0 1-	3.0 1- 3.0		
	230 0	_1=.3.0,_1=.3	3.0 1- 3.0 1- 3.0 3.0 1- 3.0 1- 3.0	1 ~ 3.0 5-15.n	1-3.0 1-3.0	1- 3.0 1-	3.0 1-3.0		
	2500	1- 3.0 1- 3	3.0 1- 3.0 1- 3.0	1- 3-0 5+15-D	2- B-2 1- 3-D	1 = 3.0 1 =	3.n 1- 3.0		
	2600	1- 3+0 1-3	3.0 1+ 3.0 1- 3.0 3.0 1- 3.0 1- 3.0	2- 8-2 5-15.0	2-8.2 1-3.0	1- 3.0 1-	3.0 1- 3.0		
	2800	1-3.0 1-3	3.0 1- 3.0 1- 3.0	1 2- 3.0 5-15.D	2-3.0 1-3.0	1- 3.0 1-	3.D 1- 3.O		
	3000	1-3.0 1-3	3.0 1- 3.0 1- 3.0 3.0 1- 3.0 1- 3.0	2-3.0 5-15.0 2-3.0 5-15.0	2-3.0 1-3.0	1- 3.0 1-	3.0 1- 3.0		w 10 A
									**
	3100	1- 3.0 1- 3	3.0 1-3.0 2-3.0	2-3.0 5-15.0	2-3.0 2-3.0	1- 3.0 1-	3.0 1- 3.0		
	3200	1- 3.0 1- 3	3.D 1- 3.D 2- 3.C	1 2- 3.0 5-15.0	2- 3-0 2- 3-0	1-3-0 1-	3.D 1- 3.D		
	3460	i = 3.6 1 = 3	3.0 1- 3.0 2- 3.0 3.0 1- 3.0 2- 3.0) 2+ T.B 5+15.D	7- 3.0 2- 3 ₋ 0	1- 3-0 1-	3.0 -1- 3.0 - 3.0 -1- 3.0 -	· · · · · · · · · · · · · · · · · · ·	
	3200	1 1 3 6 7 1 2 9	3.0 1-3.0 2-3.0 3.0 1-3.0 2-3.0	1 2- Tan 5-15-n	2+ 3.D 2- 3.D	1- 3-0 1-	3.0 1- 3.0 3.0 1- 3.0	•	
				- 240 2-1240	2 3 40 2 3 40	. 3.0 1		•	

3700 1- 3.0 1- 3.0 2- 3.0 2- 3.0 2- 3.0 5-15.0 2- 3.0 2- 3.0 2- 3.0 1- 3.0 1- 3.0 1- 3.0 3- 3
3900 1-3,0 1-3,0 2-3,0 2-3,0 2-3,0 2-3,0 5-15,0 2-3,0 2-3,0 2-3,0 1-3,0
and the second of the second o
the state of the s

		COMPOSITE	OOR MODELING OF ALL STACKS P	LUS RIDGEVENI			se 2) v. 42	stable
					. DATA			
		INITIAL	ACTUAL				gayyya arabanda araba araba ar	
	WIND SPEED (FT/SEC)	WIND DIRECTION (DEG)	MIND	DISPERSION EQUATION IEQUA	STABILITY CLASS ICLASS	AMBIENT TEMPERATURE (DEG F)	TIME ADJUSTMENT FACTOR	LAYER LAYER ELEVIFTI
	8,20	270.0	•0	SIFFORD	A	70.0	1.0000	•000
	CONNEIND	00 1 1 1 1 1 0 0	CROSSHIND	MAX, CROSSIND DIŞTANCE	NO. OF	INCREMENTS	DESTRED	STACK LOCATIONS PLOTTED?
•	(FT)	(FT)	(FT)	(FT)	¥X	NY	NPLOT	D .
		NO. OF Stacks NOS	ND. OF Z INCREMENTS NX	ND. OF SIKA STIFTS TIHEN	NO. OF CONC. LEVELS SUPPLIED NC	NO. OF RECEPTOR POINTS NR	NO. OF LINE COORDINATES NL	
		23	0 .	1	<u> </u>	1	5	
						-		

		_							
			EH-FAB ODOR 1 MPDSITE DF A1		S RIDGEVENT		 		
			· .	·		200 E	 	•	•
			STACK DATA				 REC	PTOR POINT	DATA
	STACK	DOWNWIND	CROSSWIND DISTANCE	EMISSION	STACK	· · · · · · · · · · · · · · · · · · ·	 RECEPTOR POINT	DOWNWIND DISTANCE FROM REF.	CROSSWIND DISTANCE FROM REF.
• •	ЙО	(FT)		(SCFS)	IDENTIFICATION	· · · · · · · · · · · · · · · · · · ·	 	(FT)	(FT)
	·ī	216.0	26.D	8.3000-03	TOWER A		 1	572.5	
	2	26 D • D	4.0	1.1600-01	TOWER B.C.D				
•	3	266.0	-8.0	4.2600-01	TOWER E		 		
	4	136.D	86.0	3.7700-01	TOWER 6				
	5	132.0	8.0	3.6000-02	TOWER J		 		
	6	142.0	14.D	6.0000-D3	TOWER K				
	7	152.D	-38.D	3.6000-02	TORER H				
	8	112.0	164.B	6.0000-03	RV 1		 		
	9	120.0	148.0	6.0000-03	RV 2				
_	10	128.0	130.0	6.0000-03	RV 3		 		
	11	138.0	112.0	6.0000-03	RV 4				
	. 12	146.0	94.0	6.0000-03	RV 5		 		
	13	156.D	76.0	6.0000-03	RV 6	•			
	14	164.0	58.0	6.0000-03	RV 7				
	15	172.0	40.0	6.0000-03	RV 8				
	. 16	182.0	22.0	6.0000-03	, RV 9		 		
	17	192.0	6.0	6.0000-03	RV 1D				
	18	200.0	-14.0	6.0000-03	RV 11		 		
	19	210.0	+34 . D	6.0000-03	RV 12				
		218.0 _	-50.D	6.0000-03			 		
	21	226 · D	-68.0	6.0000-03	RV 14				
	. 22	. 236.D	-86.D	6.0000-03	. RV 15		 		
	23	244.0	-104.0	6.0000-03	RV 16				

CHEM-FAB ODOR MODELING Composite of all stacks plus ridgevent

STACK DATA (CONT.)

	ACTUAL STACK	STACK	STACK	VOLUMETRIC FLOW AT	MOLECULAR	HEAT RELEASE	STUMME OR BUILD	PLUME RISE	VOLUMETRIC FLOW AT	GAS Exit	
STACK NO.	HEIGHT (FT)	TEMP. (DEG F)	DIAMETER (FT)	7D DEB F (SCFS)	WEIGHT OF GAS	DR BUILD HEIGHT	HEIGHT	EQUATION USED	AMB. TEMP.	VELOCITY (FT/SEC)	
1	47.50	582.00	1.00	12.50	29.10	300.00	25.00	B+DOMN	12.50	31.29	ŕ
2	39.00	437.00	1.33	55.10	29.10	300.00	25.00	B-DOMM	55.10	67.12	\$ 1
3	48.50	544.00	2.50	133.30	29.10	300.00	25.00	B-DOWN	133.30	51.44	ė
4	52.00	584.00	2.50	117.80	29.10	300.00	25.00	B-DOWN	117.80	47.27	G
5	29.80	461.00	1.00	17.20	29.10	100.00	25.00	B-DOWN	17.20	38.06	1
6	32.80	520.00	1.17	17.20	29.10	300.00	25.00	B-DOWN	17.70	29.58	×
7	36.80	574.00	1.33	53.80	29.10	300.00	25.00	8-D0WN	53.80	75.55	~1
8	26.50	124.00	4.90	B. 96	29.10	300.00	25.00	B-DOWN	B. 96	.52	• ~
9	26,50	124.00	4.90	B. 96	29.10	300.00	25.00	B-DOWN	8.96	.52	
10	26.50	124.00	4.90	8.96	29.10	300.00	25.00	8-DOWN	8.96	.52	
11	26.50	124.00	4.90	B. 96	29.10	300.00	25.00	8-DOWN	8.96	. 52	
12	26.50	124.00	4.90	8.96	29.10	300.00	25.00	B-DOWN	8.96	.52	
. 13	26.50	124.DD	4.90	8.96	29.10	300.00	25.00	B-DOWN	8.96	.52	
14	26.50	124.00	4.90	8.96	29.10	300.00	25.00	B-DOWN	8.96	5 2	
15	26.50	124.00	4.90	8.96	29.10	300.00	25.00	B-DDWN	8.96	.52	
16	26.5D	124.00	4.90	8.96	29.10	300.00	25.00	B+DON4	8.96	. 52	
17	26.50	124.00	4.90	8.96	29.10	300.00	25.00	B-DOWN	8.96	.52	
18	26.50	124.00	4.90	8.96	29.10	300.00	25.00	B-DOWN	B. 96	52	
19	26.50	124.00	4.90	8.96	29.10	300.00	25.00	B+DOWN	8.96	.52	
20	26.50	124.00	4.90	8.96	29.10	300.00	25.00	B-DOWN .	8.96	. 52	
21	26.50	124.00	4.90	8.96	29.10	300.00	25.00	8-00MN	8.96	.52	
22	26.50	124.00	4.90	8.96	29.10	300.00	25.00	B-DOWN	8.96	•52	
23	26.50	124.00	4.90	8.96	29.10	300.00	25.00	B-DOWN	8.96	.52	

CHEH-FAB ODOR MODELING COMPOSITE OF ALL STACKS PLUS RIDGEVENT EFFECTIVE STACK HEIGHT DATA 3.0 42.0 STACK 15.0 23.2 FP\$ FP\$.... FPS NO. FPS.FPS FPS. . . 51.6 51.4 73.064.4 80.9 489.5 205.1 130.7 99.0 82 . B 202.3 475.9 100.3 84.7 75,3 130.B 48.2 40.6 36 . B 34.4 5 141.8 70.5 51.8 306.2 .0 • 0 • 0 В 27.6 • D • 0 .0 27.6 • 0 • 0 • 0 11 D • D - 0 12 27.6 • 0 • D • D .0 • 0 ,• D 27.6 27.6 ___. • D _ _• 0 13 27.6 • D • D • 0 . 0 27.6 • (1 . 0 16 • 0 • 0 _...0_ • 0 . 0 • 0 • B 17 27.6 18 • 0 .0 20 • 0• G0 21 22 27.6 _,0 ___. • Q .. ,__ • 0 .0 23 27.6

				ODOR MOI E OF ALL		PLUS RIDG	EVENT
							7
HUHIXA	CONCENTRA	TION DA	T A				
				, .			war and the same of the same o
MOIVID	JAL STACK!	S AT ALL	WIND SP	EEOS			2. 10. 10. 10. 10. 10. 10. 10. 10. 10. 10
STACK	3.0	8.2	15.0	23.2	32.2	4 Z • D	
NO.	175	FP\$	F,P,S	. FPS	FPS	FPS	
1	1 86-02	1 86-02	1 40-02	1 28-02	1 01-02	8.57-33	
2				1.44-01			e e e e e e e e e e e e e e e e e e e
ì				2.44-01			
4				2.11-01			
5				1.04-01			
6						1.12-32	To the first of the second of
7	2.39-02	3.42-02	3.99-D2	4.06-02	3.89-02	3.63-02	
8	2.70-01	5.94+03	2.97+03	1.92+03	1.38+03	1.06+33	
9	2.70-01	5.44+03	2.97.03	1.92+03	1.38+03	1.06+03	
10	2.70-01	5.44+03	2.97+03	1.92+03	1.38+03	1.06+03	
. 11	2.70-31.	5.44 +D3.	2.97+03	1.92+03	1.38+03	1.06+03	
12	2.70-01	5.44+03	2.97+03	1.92+03	1.38+03	1.06+03	
13	2.70-01	5.49+03	2.97+03	1.92+03	1.38+03	1.06+33	
14						1.06+03	
15						1.06+03	
16						1.06+03	
17						1.06+03	
18						1.06+03	
19						1.06+03	
20						1.06+03	
21						1.06+03	the state of the s
22						1.06+33	
23	2.70-01	5.49 +03	2,97+03	_1.92+D3	1.30+03	1.06+03	

量量質問問目目目日日日日日日日日日日日日日日

CHEH-FAB ODOR MODELING COMPOSITE OF ALL STACKS PLUS RIDGEVENT

DISTANCE	DOMNMIND	OF MAXIBUR	CONCENTRATION
T 41 50 - 44 - 50 4 4			

STACK NO.	3.D FPS	B.2 FPS	15.D FPS	23.2 FPS	32.2 FPS	42.D FPS	
1	713.6	420.3	340.8	306.5		278.1	
2	1171.0	597.B	419.7	341.9	301.5	276.9	
3	1730.2	1004.8	652.1	505.4	428.9	382.3	
4	1670.4	996.6	652.4	511.4	437.9	393.2	· · · · · · · · · · · · · · · · · · ·
5	665.6	347.9	261.D	223.2	203.6	191.8	
6	702.9	370.0	279.D	239.4	218.9	206.5	E in the first community of the second control of the second contr
7	1279.9	661.8	451.2	358.8	310.8	281.6	and the same of th
8	156.6	1.0	1.0	1 • D	1.0	1.0	
9	156.6	1.8	1.0	1.0	1.0	1.0	
10	156.6	1.0	1.0	1 • D	1.0	1.0	
11	156.6	1.0	1.0	1 • D	1.0	1.0	
12	156.6	1.0	1.0	1.0	″ 1.D	1.0	
13	156.6	1.0	1.0	1.0	1.0	1 • D	
14	156.6	1.0	1.0	1.0	1.0	1.0	
15	156.6	. 1.0	1.0	1.0	1.0	1.0	
16	156.6	1.0	1.0	1.0	1.0	1.0	
17	156.6	1.0	1.0	1.0	1.0	1.0	
18	156.6	1.0	1.0	1.0	1.0	1.0	
19	156.6	1 • D	1.0	1.D		1.0	
20	156.6	1.D	1.0	1.0	1.0	1.0	100000000000000000000000000000000000000
21	156.6	1.0.	1 • 0	1.0	1.0	1.0	
22	156.6	1.0	1.0	1 . D	1.0	1.0	• • • • • • • • • • • • • • • • • • • •
23	156.6	1.0	1.0	1.0	1.0	1.0	

.

en de la companya de la co

		CHEM-FA	B ODOR MOD TE OF ALL	ELING STACKS PLUS	OTOGEVENT .	** **					•	
			, , , , , , , , , , , , , , , , , , , ,		,002.2.							
		WIN	E L	EVATION ABOVE	WIND	DOWNW Shift	IND	CROSSWIND SHIET FRO REFERENCE (FT)	H			
		SPE		FERENCE	DIRECTION	REFERE	NCE	REFERENCE				
	*** .	. (FT/S	FC1	(FI)	(DEG.)	(FT)		" (FT)	-			
		8.	,	.0	270.0		0					
			=	•0	17440	•		• •				
		. STACK D	ATA								EPTOR POINT	DATA
				•	•		* * *					
TACK	DOWNWIND DISTANCE	CROSSWIND.	STACK	EMISSION . RATE OF	STACK					RECEPTOR	DOWNWIND DISTANCE FROM REF.	CROSSVIND Distance
NO.	FROM REF.	FROM REF.	HEIGHT	POLLUTANT	STACK IDENTIFIC	ATION				NO.	FROM REF.	FROM REF.
	(FT)	(FT)	(FT)	(SCFS)							(FI)	(FT)
1	216.0	26.0	80.97	8.3000-03						i		• 0
2	260.0 266.0		118 · 88 205 · 09	1.1600-01	TOWER B.	C.D						
•	136 • D	-8.0 86.0	202.33	4.2600-01 3.7700-01	TOWER E Tower G							
5	132.0	8 • D	65.89	3.6000-02	TOWER J	* **	**				-	•
6	142.0 152.0	14.0 -38.0	70.47 132.83	6.0000-03 3.6000-02	TOWER K Tower M							
8	112.0	164.0	•00	6.0000-03	RV 1							
9. 10	120.0 128.0	148.0	•00	6.0000-03	RV 2					-		•
11		130.0 112.0	•00 •00	6.0000-03 6.0000-03	RV 3 RV 4							
12	146.0	94.0	•00	6.0000-03	RV 5							
13 14	156.0 164.0	76.0	•00	6.0000-03	RV 6					•		
15	172.0	58.D	•00	6.0000+03 6.0000+03	RV 7 RV B							
16	182.0	22.0	. •00	6.0000-03	R V 9							
17	192.0 200.0	6.0	•00	6.0000-03 6.0000-03	RV 10						-	
19	210.0	-34.0	•00	6.0000-03	RV 12			· · · · · · · · · · · · · · · · · · ·				
20	. 218.D 226.D	-50.D -68.D	•nn	6.0000-03	RV 13							
22	236 • D	-86 • D	•00	6.0000-03	RV 14 RV 15							
23	244.0	-104.0	.00	6.0000-03	RV 16							
											•	
					· · · · · · · · · · · · · · · · · · ·						•	• •-
		-						******				

	CHEM-FAB OD COMPOSITE O	STACK NO.	MAXIMUP CONTRIBUTION TO MAXIMUM CONCENTRATION	PELATIV CONTRIBUT .00000	E STACK ION IDENTIFICAT TOWER A TOWER B,C,	ION	
		STACK NO.	MAXIMUP CONTRIBUTION TO MAXIMUM CONTRATION .0000 .0000	PELATIV CONTRIBUT .00000	E STACK ION IDENTIFICAT TOWER A TOWER B,C,	ION	
		STACK NO 1 2 1	CONTRIBUTION TO MAXIMUM CONCENTRATION	PELATIV CONTRIBUT .00000	E STACK ION IDENTIFICAT TOWER A TOWER B,C,	ION	
		STACK NO 1 2 1	CONTRIBUTION TO TO MAXIMUM CONCENTRATION	#ELATIV CONTRIBUT .00000 .00000	STACK ION IDENTIFICAT TOWER A TOWER B,C,	ION	
		STACK NO 1 2 1	TO MAXIMUM CONCENTRATION	RELATIV CONTRIBUT .00000 .00000	STACK ION IDENTIFICAT TOWER A TOWER B,C,	1 0N	
		NO •		.00000 .00000	TOWER A	ION	
		1 2 3	• 3000 • 3000 • 3000	.00000	TOWER A		
<u></u> . <u>.</u>		1 3	.3000 .3000 .3000	.00000	TOWER A		
		2 3	0000	.00000	TOWER B,C.		
		2 3	0000	.00000	TOWER B,C.	n	- •
, a a		4				U	
	-· · · · · · · · · · · · · · · · · · ·	4			TOWER E		
	·	5		.00000	TOWER G		
			1.0202-13	.00000	TOWER J		
		6	5.2969-23	.00000	TOWER K		
		7	.000	.00000	TOWER M		
	*	6	1.7964-08	.00000	RV 1		
		9	4.4453-08	.00000	RV 2		manage and the second of the second
		10	1.7608-07	.00000	RV 3		
		11	3.8743-07	.00000	RV •		
		12	2.2999-36	•00000	RV 5		
		13	7.7134-36	.00000	RV 6 .		
		14	9.9341-05	.00001	· RV 7 RV B		
		15 16	2.5447-03	.00015	RV 9	1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -	
		17	8.8926-02 1.6691+01	.0D53D	RV 10		
		16	•3000	.00000		. .	
		19	•3000	•00000	RV 12		
	14 - 1 - 14 - 14 - 14 - 14 - 14 - 14 -	2 D	3000	.00000	RV 13		
		21	.3000	.00000	RV 14		
		22	• 0000	.00000	RV 15		
		23	.3000	.00000	RV 16		
•							
				CROSSWIND			
				DISTANCE	PURIXAN	PT4 0 (17) 4	1 8- 6
	· · · · · · · · · · · · · · · · · · ·	*		FROM REF.	CONCENTRATION	STABILITY .	winaspeed
			(FT)	(FT)			•
			•	•			
			200.00	.00	1.6782+01	A	8.2 503

	. a second of the second of th	. CHEM-FAB DOOR. COMPOSITE OF A	MODELING LL STACKS PLUS	RIDGEVENT				
errer en an almanus de de seus				NIND SPEED (FT/SEC)	ELEVATION ABOVE REFERENCE (FT)	WIND DIRECTION (DEG.)	STABILITY	
				8 • 2	• D	270.0	1	
		***		RECEPTOR	POINT DATA			
TACK +		STACK	* STACK	STAPE	EFFECTIVESTACKCONTRIBUTE	RELATIVE STACK ON CONTRIBUTION	• STACK	RELATIVE STACK CONTRIBUTION
	DECENTO	R PT. 1	<u> </u>		•			
		K PI . I	•		•		•	
1 •	1.747-02	.02511	•		•		•	
2 •	2.852+D2		•		• <u></u>		<u> </u>	
3 •	4.366-05	.00006	•		•		•	
4 •	8.192-D3		•		<u> </u>			
5 •	1.102-01	.15840 .02462	*		:		·	
7	1.713-02				· 🔭		•	• •
, R	1.158-02				•		•	
9	1.389-02	.01996		•	•		•	
10	1.684-02	.02420	•		•		•	
11	2.026-02	.02912	•		•		•	
12	2.392-02	.D3438	•		•		•	
13	2.799-02	.04024	•		•		•	
14	3.195-02	.04592	•		•		•	
15	3.572-02	.05134	•		•			
16			•					
17		.06D85 .06296	•		•		•	•
19	4.381+D2 4.395-D2	.06316	•	*	•	• • •	•	•
20	4.259-02	.06121	•		•		•	
21		.05645	•	•	•		•	
22 .	• 3.477-DZ	.04997	•		•		•	
23	2.889 -02	.04152	•		•		•	
	•		•		•			
TOTAL	• 6.958-D1	1.00000	•		•		1	

	big	<u> </u>		5		200	i i			Pices				3				ب د					لسلا
•					CHEH- COMPO	FAB OD SITE O	OR MOD F ALL	ELING Stacks	PLUS R	IDGEVI	ENT		C/45.	5 A	· _ 5	Tability					··· • · · · · · · · · · · · · · · · · ·		
٠	C M D	1 = 8 =	-2000. 800.	CMD	2 = 9 =	-1600. 1200.	CMD	3 = 10 =	-1200. 1600.	CMD	4 = 11 =	- 8 (2 O (00.	CMD	5 =	-400.	C W O	6 =	0.	CAO	i =	¥00∙	
	DIST	CWD	CND	C N D	c#0'	CWD	CWD .	CMD	CMD	. CMD _	_CHD.	c	¥0										
	100	000	.000	•000	•000	• 000	.000	.000		.000	000	(;	000							****			
	201	,	• 000	• 000	• 0 0 0	• 000	16.787		. กกก	. 000	000	· ·	000										
	300	• 000	.000	• 0 0 0	• 0 0 0		4.382	• 000	• 000	• 0 0 0) - (-	
	501		• 000	▲ 0 0 0		- กกก		007	000	0.00	000								** **				
	600	000	•000		.000	.002	• 6 <u>6 5</u>	.017		_ • 0 0 0 .		(000			·····							
	001		טעט •	• 0 0 0	• 11 U U	• 023	. 629	-056	• 000	. 0 00	nnn	۱. ۱	חחח			** ***							
	1000	, .000 200	.000 .000	•000	•000	.045	• 6 4 6 • 6 4 6	.089	• DOO	.000	• 000) • (נטט							**			
															:-								
	1100	.000	.000	.000	•001	104	.628	150	.003		n n r		nnn										
	1200	• 000			002	131	_ •592	.185	•005	•000	.000												
			.000	.000	.004	. 151	.543	.201	.009	.000	.000		000										
	1500	,000	•000	•000	•D11	.164	. 428	.202	.019	• 0 0 0	.000		טטט ככם					*					
	1600	000	000_	000	015	162	375	.194	_ + D24		000	(000								. ,		
	1600	•000	.000	.001	_ • D23	.148	.287		.028		.000		~~~										
	1900	000.	.000	.002	.026	.138	.250	. 157	.035	-003	• 000	• (000										
			.000		+020				•036		.000) s(
	2100	.000	.000	.003	•029	115	.188	120	0.7.7	 DDE		;	000							-			
	2200	.000	•000	.004	.030	.105	-169	.115		.005 .006	.000												
		.000	.000	.005 .005	.030	.095 .086	•143 •125		•036 •036	.006	.001		000										
	2500	.000	.001	.006	.029	.078	.111	.089	•036	.007	.001												
		.000	.001	.006	•029 •028	.071 .064	-098 -087	.076		.008	.001	1	000										
	2800	.000	.001	.007	.027	.059	.078	.062	•032 •030	.009	.001		000										
		000. (.001 .002	.008 .008	.026	.053	.070 .063	.057		.009	.002		000										
								****				· • (:					
	3100	.000	.002	4008	.023	.045	. 056	.047	• 026	.010	.002		000 .										,
	3200	000.0	.002	.008	.022	.041	.051	.043	+025	. D 1 0	.003	3 .1	000										
		000.	•002 •002	•008 •008	.021 .020	.038	•046 •042	.040 .036	• 023 • 022	.010	.003		001 001										
		.001	.003	-008	.019	.032	•039	.033	.021	.009	.003	:	001										
	3700	.001		.008 80¢.	.D18	.030	•035 •032	.031	•020 •019	.009	.003		001 031		-							-	
		.001	.003 .003	.008	.016	.025	•030	.026	.018	.009	.003	(001										
		.001		.00a	.016	• 024 • 022	.027 .025		.017	.009	.003		001 001										
												- '											

CHEM-FAB ODOR MODELING COMPOSITE OF ALL STACKS PLUS RIDGEVEN

	S
RIDGEVENT	CONDITIONS
	OGICAL
ALL STACKS PLUS	METEOROLOGICAL
ALL	4
COMPOSITE OF	UNDER ALL
CDMPO	CONC.
	DOWNETHO
	ž

							_	•							1					;							:				•	,						_							
0	•								1						8 8 8 9 1 1 1 1 1			:					•		•																				
i -	-:				:				i : :				•					:																			3 (1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1							
					•		•																· †			,	1 1 1 1 1										;	: : : : :							
1))														1			:										•				:			;		7	• • • • •					٠		
9	;	02.0		C	•	0	0		0	C			0	000		- 1		9		0	0	0	0		0	• 000	٠	c	o c	a	0	8	0	0	000	0	0		0	0 0	000	8 8	000	200.	5 1
U 0 7 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1) -} -}			00	0	0	0		0		0	0	0	000		10	3 (-	\Box	0	0		0	0	0	000	1		-	0	0	0	0	0		o	9000		0	0 0	-	0 0	– (600.) (
030		CAO	0	0	000	0	0	0	0	0	0	0	0	000			9	-	ο.	O,	\circ	0	•005	0	0	.007		-	5 6	-	0	0	2	2	•023	2	+054	ı. ۸	, כ	ט כ	30	7,	v	120.	١ ١
•			- 80		0	О	О	0		0	0		0	,001		. 0	2 (-	٠ د	-	~	~	240.	ŝ	•	~		-	- 40	8	80	8	8	~	110.	_	-	1 00	0	2 0	> 0	□ c] :		٠.
37	1	0.10	-	0	000.	0	0	0	_	m	•	~	œ			: 4	n	9 ()	Э.	2	3	• 5 6 4	~	~	.271		~	3	4	2	7	m	4	*248	5				n u	n	n u	n	.251	1 :
0	15	3	9	0	0	. 78	. 21	. 7.1	• #5	• 59	7O.	9 6	. 35	2,132	* * * * * * * * * * * * * * * * * * * *	0		9	9 6		4	_	3.5	O:	#	1.194		1.168			1.171				1.131	1,116	1.100	· •	4	2 0	֓֞֝֜֜֜֓֓֓֓֓֜֓֓֓֓֜֓֓֓֓֓֓֓֓֓֓֓֡֓֓֡֓֓֡֓֜֓֓֡֓֡֓֡֓֡֡֡֓֡֓֡֓֡֡֡֡֡֡	2 0	3 5	1.073	•
NO 3	9		١n	0	000•	00	0	00	0	0	_	m	S	~		10.6		7 4	7 .	0	30 (_	2	~	#			. 6	~	~	0	a	ο.	-	.223	2	m i	· •	~	7 ~	7 F	1 ~	7 ٢	.234	1
٥.	00.	CHO			0		0	00		0	0	0		000	4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4) C	0 0	0	٠.	- 1	7	•020	n.	#	S	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	•	9	9	9	~	~ .	ø	.067	۰	۱ د		•	~ ∝) a	0	ò	660.	
1-1		3:		0	• 000	•	0	0	0	\Box	0	0	0	000	1 1 1 4 2 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	∵ ⊂) C) C) C	> (– (9	0	0	0	.005	t		0	~	~	_	0	~	~ (V	020	~ ~	2	1 N	1 5	1 ~	10	,024	
O CHO	<u>د</u>	CHO		0	000	0	0 :			ς,	0	0			; ; ; ; ;) C	0 0	ם כ	ב כ	¬ (⇒ (- 1	0 (000	ŧ	0	0	\circ	0	0	_	-		_ (500	0	00		3 5			.00.	
= -200	0.6	0	- (0	000.		0 6	0	0	ο.		0	0	•	# 	0	C	200) =	3 C	D 0	¬ (000.	– (– 0	- 1		· 🗅	0	0	0 (– (-	⊃ 0	000	2 0	⊃ 1	0	0	0	0	.002	0	0	
OH.	3:	S	•	- (001	-	5 ()	_ (9	-	0 1	9	0				J	3		ם כ	9 6	007	2 0	בי כ	3 :		0.7	20	20	9 (0,0	2 6	2 5	2800	2 6	3!	<u> </u>	20	200	9	3500	9	70	

.244 .120 .036 .009 .003 .240 .122 .039 .010 .003	.244	1.007 .244	.229 1.007 .244 .226 1.000 .240	.105 .229 1.007 .244 .107 .226 1.000 .240	.029 .105 .229 1.007 .244 .0032 .107 .240
.244 .120 .240 .122	.244	1.007 .244	.229 1.007 .244 .226 1.000 .240	.105 .229 1.007 .244 .107 .226 1.000 .240	.029 .105 .229 1.007 .244 .0032 .107 .240
	1.007			.105	.029 .105

CHEM-FAB ODOR MODELING COMPOSITE OF ALL STACKS PLUS RIDGEVENT

METEOROLOGICAL CONDITIONS CORRESPONDING TO MAX DOWNWIND COME.

STABILITY - WIND SPEED

	A Marian Service			The second of th
CMD	1 = -2000. CND 2 = -1600. C	UN 3 → _1200 CUN #		5 m - 110 m - 1 m - 100
CMD	8 = 800. CHD 9 = 1200. C	MO 3 = -1200. CMD 4	800. CMU	5 = <u>-400.</u> CHO 6 = CNO 7 = 400.
DIST	CHD CHD CHD CHD	CAD CAD CAD	- ZODD.	CHO CHD
	1 2 3 4	5 6 7	8 9	CWO CWD
a				
100		00 00		00 00
200	00 00 00			0
	00 00 00			
400	D0 D0 D0 1- 8.2	1- 8-2 6- 8-2 1- 3-0	1- 3-0 1- 3-0	0
500	0 - 10 0 - 11 1 - 6.2 1 - 6.2	1 # 3.D 4 # B 2 1 # 3 D	1 - 3 0 1 - 3 0	0- 0 0- 0
600	00 1- 8.2 1- 8.2 1- 8.2	1- 3.0 6- 8.2 1- 3.0	1- 3-0 1- 3-0	1- 3.0_ 00
. 800	1- 3.0. 1- 8.2 1- 8.2 1- 3.0	1- 3.0 6- 8.2 1- 3.0	1- 3-0 1- 3-0	1-3.0 1-3.0
900	1- 3.0 1- 8.2 1- 8.2 1- 3.0	1- 3.0 6- 8.2 1- 3.0	1- 3.D 1- 3.D	1+ 3.0 1- 3.0
1000	1- 3.0 1- 3.0 1- 3.0 1- 3.0	1- 3.0 6- 8.2 1- 8.2	1-3.0 1-3.0	1- 3.0 1- 3.0 1- 3.0 1- 3.0
1100	1- 3.0 1- 3.0 1- 3.0 1- 3.0	1- 8.2 6- 8.2 1- 8.2	1-8.2 1-3.0	1- 3.0 1- 3.0
1200	1-3.0 1-3.0 1-3.0 1-3.0 1-3.0	1-8.2 6-8.2 1-8.2	1-8.2 1-8.2	1- 3.0 1- 3.0
1300	1- 3.0 1- 3.0 1- 3.0 1- 3.0	1- 8.2 6- 8.2 1- 8.2	1-8.2 1-8.2	1-3.0 1-3.0
1400	1- 3.0 1- 3.0 1- 3.0 1- 3.0	1- 8-2, 6-,8-2, 1- 8-2	1-3.0 1-3.0	1- 3.0 1- 3.0
1500	1- 3.0 1- 3.0 1- 3.0 1- 3.0	1-3.0 6-8,2 1-3.0	1-3.0 1-3.0	1- 3.0 1- 3.0
1600	1- 3.0 1- 3.0 1- 3.0 1- 3.0	1- 3.0 6- 8.2 1- 3.0	1- 3.0 _ 1- 3.0	1- 3.0 1- 3.0
1700	1- 3.0 1- 3.0 1- 3.0 1- 3.0	1- 3.0 6- 8.2 1- 3.0	1-3.0 1-3.0	1-3.0 1-3.0
1800	1-3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0	1- 3.0 6- B.2 1- 3.0	1-3.0 1-3.0	1-3.0 1-3.0
1 4 0 0	1- 3.0 1- 3.0 1- 3.0 1- 3.0	1- 3.0 6- 8.2 1- 3.0	1-3.0 1-3.0	1-3.0 1-3.0
2000	1- 3.0 1- 3.0 1- 3.0 1- 3.0	1- 3.0 6- 8.2 1- 3.D	1-3.0 1-3.0	1- 3.0 1- 3.0
			~~~~~~~~~	***************************************
2100	The state of the s	م المراج ورموج وال		The state of the same of the s
2100	1- 3.0 1- 3.0 1- 3.0 1- 3.0	1- 3.0 5-15.0 1- 3.0	1- 3.0 1- 3.0	1- 3.0 1- 3.0
. 2200	17 3.0 17 3.0 1 3.0 1 3.0 1 3.0 1 3.0 1 3.0 1 1 3.0 1 1 1 1 3.0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1 = .3 • D . 5 = 15 • D . 1 = .3 • D .	1-3.0 1-3.0	1-3.0 1-3.0
2400	1- 3.0 1- 3.0 1- 3.0 1- 3.0	1- 3.0 5-15.0 1- 3.0	1-3.0 1-3.0	1- 3.0 1- 3.0
2500	1-3.0 1-3.0 1-3.0 1-3.0	1-3.0 5-15.0 2-8.2	1-3.0 1-3.0	1+ 3.0 1- 3.0
2600	1-3.0 1-3.0 1-3.0	2- 3-0 5-15-0 2- 3-0	1-3-4 1-3-11	1- 3-0 1- 3-0
2700	1- 3.0 1- 3.0 1- 3.0	2- 3-0	1-3.0 1-3.0	1- 3.0 1- 3.0
2800	1- 3.0 1- 3.0 1- 3.0 1- 3.0	2 3 1 5 - 15 - D 2 - 3 - D	1- 3-0 1- 3-0	1- 3.0 1- 3.0
2900	1- 3.0 1- 3.0 1- 3.0 1- 3.0	2- 3-0 5-15-0 2- 3-0	1 - 3.0	1 = 3.0 1 = 3.0
3000	1- 3.0 1- 3.0 1- 3.0 2- 3.0	2- 3.0 5-15.D 2- 3.0	2- 3-0 1- 3-0	
				1- 3.0 1- 3.0
		·		
3100	1-3.0 1-3.0 1-3.0 2-3.0	2- 3.0 5-15.0 2- 3.0	2-3.0 1-3.0	1-3.0 1-3.0
3200	1- 3.0 1- 3.0 1- 3.0 2- 3.0	2- 3.0 5-15.0 2- 3.0	2-3.0 1-3.0	1 - 3.0 1- 3.0
3300	1- 3.0 1- 3.0 1- 3.0 2- 3.0	2- 3.0 5-15.0 2- 3.0	2-3.0 1-3.0	1-3.0 1-3.0
3400	1- 3.0 1- 3.0 1- 3.0 2- 3.0			
	1-3.0 1-3.0 1-3.0 2-3.0	2- 3.0 5- 8.2 2- 3.0	2-3.0 1-3.0	1-3.0 1-3.0
2011	1- 3.0 1- 3.0 1- 3.0 2- 3.0	2- 3.0 5- 8.2 2- 3.0	2- 3.0 2- 3.0	1- 3.0 1- 3.0

0000 0000 0000 7227 n n n n in m'm n 2-2-2-nn n n 5555 m m m m 74,24 200 m 3700 3800 3900 4000

		DOR MODELING OF HODIFIED STAI	CKS WITH DUCTER	RIDGEVENT	C	45e 4) un	stable.
			nzin	a_DATA			
en e e e e e e e e e e e e e e e e e e		Control of the Contro					
NIND Spred	INITIAL WIND DIRECTION	ACTUAL NIND DIRECTION	DISPERSION EQUATION	STABILITY CLASS	AMBIENT TEMPERATURE	TIHE	INVERSION LAYER ELEV(FT)
999.00	270.0	.0	31FFORD	ICLASS B	73.0	1.0000	•000
MIN. DOWNWIND DISTANCE LFT1	HAX. DOHYHIND DISTANCE (FT)	MIN. CROSSWIND DISTANCE (FI)	HAX. CROSSWIND DISTANCE (FI)	NO. OF DOWNWIND INCREMENTS YX	NO • OF CROSSWIND INCREMENTS NY	PLOTTED OUTPUT OESIRED NPLOT	STACK LOCATIONS PLOTTED? NLOC
• 0	4000.0	-2303.0	2000•0	41	11	3	0
	NO. OF STACKS NOS	NO. OF Z INCREMENTS	NO. DF AXIS SMIFTS NSHIFT	NO. OF CONC. LEVELS SUPPLIED NC	NO. OF RECEPTOR POINTS NR	NO. OF LINE COORDINATES	
	В	0	0	4	1	5	
							a a manage a manage of the second of the

							-	25	F-94		<b>LA</b>		المتا	in	۳
			HEM-FAB ODOR		KS WITH DU	CTED RIDG	EVENT								
			STACK DATA								RECEPT	DA POINT	DATA		
			CROSSWIND	FULLSTON						RECEPT	n 2 n	ONNUIND	CROSS	DATH	
	NO.	FRD4 REF.	DISTANCE	RATE OF POLLUTANT	IDENTIFI	CATION				POINT	D	ISTANCE ROM REF.	DISTA	NCE REF.	
		216.0_		8,3000-03						1		572.0		•0	
	2	260.0	4.0	1.1600-01	TOWER B	.C.D IREC	DUCED TIP	)							
•	4	266.0 136.0 132.0	-8.0 86.0	4.2600-01 3.7700-01 3.6000-02	TOWER 6	IREDUCED	TIPI								
•	5 .	142.0	14.0	6.0000-03 3.5000-12	TOWER H	(									
	8	244.D	-104.D	9.5000-02	DUCTED	PIDGEVENT									
														Am	
•															,
	-								·····						
									<del></del>						
													····		
													•		
-															
				<del>-</del>											

					STACH DATA	CONT.				
STACK	ACTUAL STACK HEIGHT (FT)	STACK TEMP.	STACK DIAMETER (FT)	YDLUMETRIC FLOW AT 	MOLECULAR	HEAT RELEASE OR BUILD HEIGHT	STUHKE OR BUILD WIDTH OR HEIGHT	PLUME RISE EQUATION USED	VOLUMETRIC FLOW AT AMB. TEMP. (CU.FT./SEC)	GAS EXIT VELOCIT (FT/SEC
1 2 3	47.50 39.00 48.50	582.00 437.00 544.00	1.00	12.50 55.10 133.30	29.10 29.10 29.10	300.00 300.00 303.00	25.00 25.00 25.00	B-DOWN B-DOWN 3-DOWN	12.50 55.10 133.30	31.29 118.73 80.38
4 5 6	57,30 50,30 32,80	584,00 · 461.00 520.00	2.00 1.00 1.17	117.80 17.20 17.20	29.10 29.10 29.10	300.00 302.00 300.00	25.00 25.00 25.00	9-00MN 9-00MN 9-00MN	117.80 17.20 17.20	73.86 38.36 29.58 75.55
7 B	36.50 50.00	574.00 124.00	1.33	53.80 143.30	29.10 29.10	300.00	25.00 25.00	9-00MA - MAOG-6	53.80 143.30	50.26
										**********

	CHEM-FAD DOOR MODELING COMPOSITE OF MODIFIED STACKS WITH DUCTED RIDGEVENT	
EFFECTIV	E STACK HEIGHT DATA	
STACK	15.0	
NO.	FPS	
1	64.4	
2	85.8 136.5	
4	136.2	
5	68.4	
. 6	51.8 87.5	
<u>.</u>	75,3	
	·	
HAXIHUH	CONCENTRATION DATA	
		-
INDIVIOU	AL STACKS AT ALL WIND SPEEDS	
	·	
NO.	15.0 FPS	-
1 2	1.8P-D2 1.44-01	
3	2.17-01	
3	2.13-31 1.89-01	
3 4 5	2.13-31 1.89-01 6.96-02	
3	2.13-31 1.89-01 6.96-32 2.00-02 4.29-32	
3 4 5 6	2.13-31 1.89-01 6.96-02 2.00-02	
3 4 5 6 7	2.13-01 1.89-01 6.96-02 2.00-02 4.29-02 1.52-01	
3 4 5 6 7	2.13-31 1.89-01 6.96-32 2.00-02 4.29-32	
3 4 5 6 7 8	2.13-01 1.89-01 6.96-02 2.00-02 4.29-02 1.52-01	
3 4 5 6 7 8 DISTANCE	2.17-31 1.89-01 6.96-02 2.00-02 4.29-32 1.52-01 DOWNWIND OF MAXIMUM CONCENTRATION	
3 4 5 6 7 8 DISTANCE	2.17-31 1.89-01 6.96-02 2.00-02 4.29-32 1.52-01  DOWNWIND OF MAXIMUM CONCENTRATION  DAL STACKS AT ALL WIND SPEEDS	
3 4 5 6 7 8 DISTANCE	2.17-31 1.89-01 6.96-02 2.00-02 4.29-32 1.52-01  DOWNWIND OF MAXIMUM CONCENTRATION  IAL STACKS AT ALL WIND SPEEDS	
J 5 67 8 DISTANCE INDIVIDU	2.17-31 1.89-01 6.96-02 2.00-02 4.20-32 1.52-01  DOWNWIND OF HAXIHUM CONCENTRATION  IAL STACKS AT ALL WIND SPEEDS  15.0 FPS	
3 4 5 6 7 8 DISTANCE INDIVIDU	2.17-01 1.89-01 6.96-02 2.00-02 4.29-02 1.52-01  DOWNWIND OF MAXIMUM CONCENTRATION  IAL STACKS AT ALL WIND SPEEDS  15.0 FPS  4.70.1 591.2	-
3 4 5 6 7 8 DISTANCE INDIVIDU	2.17-01 1.89-01 6.96-02 2.00-02 4.29-02 1.52-01  DOWNWIND OF MAXIMUM CONCENTRATION  IAL STACKS AT ALL WIND SPEEDS  15.0 FPS  4.20.1 5.91.2 941.7	
J 5 6 7 8 DISTANCE INDIVIDU	2.17-01 1.89-01 6.96-02 2.00-02 4.29-02 1.52-01  DOWNWIND OF MAXIMUM CONCENTRATION  IAL STACKS AT ALL WIND SPEEDS  15.0 FPS  4.70.1 591.2	
STACK NO.  1 2 3 4	2.17-01 1.89-01 6.96-02 2.00-02 4.29-02 1.52-01  DOWNWIND OF MAXIMUM CONCENTRATION  IAL STACKS AT ALL WIND SPEEDS  15.0 FPS  470.1 591.2 947.7 945.7	

			B ODDR HODE TE OF HODIS		WITH DUCTE	ED RIDGEVENT.				
		WIN 	D	VATION ABOVE FERENCE	WIND DIRECTION (DEG.)	DOWNWIND SHIFT FROM REFERENCE (FT)	CROSSWIND SHIFT FROM GEFERENCE (FT)			
		15.	D	D	270.0	, D	• 0			
		STACK D	<u>ATA</u>					REC	EPTOR POINT	DATA
NO.			EFFECTIVE STACK HEIGHT	RATE OF POLLUTANT	STACK IDENTIF	ICATION		RECEPTOR POINT NO.	DOWNWIND DISTANCE FROM REF. (FT)	CROSSVING DISTANCE FROM REF
1	215.D 260.0	26.C	64.44 85.78	8.3000-03. 1.1600-01	TOWER	B, C, D (REDUCED T	ĪP)	11	572.0	
<u>3</u>	266.0 136.0 132.0	-8.0 -8.0 -8.0	136.49 136.22 68.37	4.2600-01 3.7700-01 3.6000-02	TOWER TOWER	E (REDUCED TIP) G (REDUCED TIP) J (RAISED ZO FT)				
	142.0 152.0 244.0	14.0 -38.0 -104.0	51.80 87.49 75.30	6.0000-03 3.6000-02 9.5000-02	TOWER TOWER DUCTED					
		W			miller street sectional systems in the section of the section of the					P4 2000 10 10 10 10 10 10 10 10 10 10 10 10
			-					a summanistic conference of the second secon	a ny mpanjagahan ny pianahan dan ina daharah dan panganan me	
					The second secon	****				
							- W. V	and the second s		

		CHEM-FA	B ODDR HODE IE OF HODER	TEO STACKS	משרטטם אדוא	RIDSEVENT				
		WIN 	D A ED	VATION BOVE ERENCE	WIND DIRECTION (DEG+)	QONNVIND SHIFT FROM REFERENCE (FT)	CROSSWIND SHIFT FROM REFERENCE (FT)			
		15.	0	0	270.0	<u>• 0</u>	• 0			
		STACK D				and also to the second of the		REC	EPTOR POINT	DATA
SJACK	FROM REF.	PROM REF.	EFFECTIVE SIACK HEIGHT	RAIE JE POLLUTANT	IDENTIFIC	ATION		RECEPTOR POINT NG.	DOWNVIND DISTANCE FROM REF. (FT)	
1	216.D 260.0	LET1 26.0 4.0	54.44 85.78		TOWER A.	C,D (REDUCED T	IP)	1		
3 4 5	266.0 136.0 132.0	-8.7 0.68 2.8		4.2600-01 3.7700-01 3.6000-02	TOWER G	(REDUCED TIP) (REDUCED TIP) (REALSED ZO FT)				
6 7 B	142.0 152.0 244.0	14.D -38.D -104.D	51.80 87.49 75.30	6.0000-03 3.6000-02 9.5000-02		RIDGEVENT			, a se representativo del del 2011 Al 400000	
		ager - delle spropper - d s dest antitrodh sidel Prot s or	······································			a address mades and all parties and an address of the desired that the desired to		de antoniado y de el alconomiento de el se		
			11 - 20							
			*							
										_ *** ** **

		Cumpas	100 DF APOL	teles filo staces	WITH DUCTE	D RIDSEVENT				
				*						
	··	WIN	EL	EVATION	NIND	ODWNWIND SHIFT FROM	CROSSWIND SHIFT FROM			
			EDRE			REFERENCE				
·		15,	p	0	270.0	. n	• 0			
		STACK D		**				REC	EPTOR POINT	DÄTÄ
	DOWNWIND		EFFECTIVE			e la fina de la compania de la comp			DONIENCO	CROSSWÍN
HO.	DISTANCE FROM REF.	FROM REF.		POLLUTANT (SCES)	IDENTTFI	CATION		POINT NO.	DISTANCE FROM REF. (FT)	
1	215.D	26•C	64.44	0.3030-03	TOWER A			1	572.0	
2	260.0 Z66.0	4.0 -8.2	85.78 136.49	1.1600-01	TOWLR B	, C, D ( REDUCED T	IP)			
4	136.0	86.0	136.22	3.7700-01	TOWER G	REDUCED TIPE				
5	132.D	2 • 8	68.37		TOWER_J	RAISED ZO FIL				
6 7	142.0 152.0	14.0 38.0		6.0000-D3		i <b>I</b>				
В	244.D	-104.0	75.30	9.5000-02		RIDGEVENT				
						· · · · · · · · · · · · · · · · · · ·				
										· · ·
	THE THEOREM IS NOT THE REAL PROPERTY OF MANAGEMENT AND ADMINISTRATION OF THE PERSON OF	- W				THE P. S. B. BORNESS AND THE CO. S. A. S. B.		* March 1 (M. v. 17 % variable 1794 * Succession 1794 *		
		A								
~~ ·- ·- ·- ·	1.000 - 1.000 var och utv v. til a vide annamelle gener a anna	en e antre eterophisphism e normal nationale strates an						agentyses and and a graph angle department of the second of Angle I.		
		***************************************								
			······································							
				to make company of the grade of						

CONTRIBUTION   TO		EH-FAB ODOR MODE MPOSITE OF MODIF		DUCTED RIDGEY	ENT				
CONTRIBUTION   TO   TO   TOWER   TO		en e	MAXIMU	M CONCENTRATI	ON DATA				
TO   STACK   HAKIHUH   RELATIVE   STACK   NO.   CONCENTRATION   CONTRIBUTION   IDENTIFICATION									
TO   STACK   HAKIHUH   RELATIVE   STACK   NO.   CONCENTRATION   CONTRIBUTION   IDENTIFICATION			CONTRIBUTION	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,					
1   1.1279-32	The second secon		TO		E STACK ION IDENTIF	ICATION			
2   1.3153-71   .19910   TOWER B,C,D (REDUCED TIP)					The state of the s				
2   1.1153-71   .19910   .1094E B.C., 0	to the first of the second contract of the second								
4 1.5809-31 .23929 TOWER G (REDUCED TIP)  5 4.2395-32 .05372 TOWER J (RAISED 20 FT)  6 8.3580-33 .01220 TOWER K  7 3.4645-32 .05244 TO4ER M  8 8.7705-92 .13578 DUCTED RIDGEVENT  DOWN-IND CROSSVIND  DISTANCE DISTANCE HAXIMUM  FROM REF. FROM REF. CONCENTRATION STABLLTY		2			TOWER	B, C, D (REDUCED	TIPI		
6 B.2580-D3 .01220 TOWER K 7 3.4645-D2 .05244 TOWER H B B.7705-D2 .13578 DUCTED RIDGEVENT  DOWNLIND CROSSWIND  DISTANCE DISTANCE HAXIMUM FROM REF. EROM REF. CONCENTRATION JTABULTY WINDSPEED  (FT) (FT)		3 4			TOWER	G IREDUCED TIPE			
7 3・645-72 .05244 TOWER M B 8・9705-D2 .13578 DUCTED RIDGEVENT  DOWN-IND CROSSWIND  DISTANCE DISTANCE HAXIMUM FROM REF. FROM REF. CONCENTRATION 574814177 いからのかとしては、 (FT) (FT)			4.2395-32	.06372			.)		
B 8.7705-D2 .13578 DUCTED RIDGEVENT  DOWN-IND CROSSWIND  DISTANCE DISTANCE HAXIYUM  FROM REF. FROM REF. CONCENTRATION STABILITY CAND SPEED  (FT) (FT)	A CONTRACTOR OF THE PROPERTY O								
DISTANCE DISTANCE HAXIMUM FROM REF. FROM REF. CONCENTRATION JTABILITY WINDSPEED (FT) (FT)				.1357 <u>8</u>	DUCTE	RIDGEVENT			
DISTANCE DISTANCE HAXIMUM FROM REF. FROM REF. CONCENTRATION JTABILITY WINDSPEED (FT) (FT)			DOWNAIND	CROSSWIND					
(F1) (F1)			DISTANCE	DISTANCE		STABILITY	يع 50 كالدز ب	eδ	
1003.00 ,00 6.6065-01 8 /5.0 3/2		AND MENT TO A STATE OF THE STAT			. Beare Fig. Similar to				
1003.00 ,00 6.6065-01 8 73.0 765									
			1003.00	,0n	6.6065-01	<u>B</u>	/5.0	7/25	
			•						
	The state of the s			******					
			·						
	a de la companya del companya de la companya del companya de la co								
								Annual Company of the	
The state of the s									

	~	CHEM-FAB ODOR	MODELING					A	
<b>.</b>		COMPOSITE OF	HODIFIED STACKS	WITH DUCTED RI	DGEVENT	Market Market State of the Late of the Lat			
					ELEVATION				
				DUIN	ABOVE	DIDECTION	C T 4 D Y 1 T T W		
**	······································			<u> </u>	REFERENCE (FT)	DIRECTION (DEG.)	STABILITY		
		The same and annual annual to the same and t		15.D	• 0	270.0	2		
				RECEPTOR	PDINT DATA				
	• EFFECTIVE	RELATIVE	• EFFECTIVE	RELATIVE	EFFECTIVE     STACK	RELATIVE STACK	<ul><li>EFFECTIVE</li><li>STACK</li></ul>	RELATIVE STACK	
NO	♦ <u> </u>	SIACK CONTRIBUTION	+ STACK + CONTRIBUTION	STACK CONTRIBUTION		CONTRIBUTION	* CONTRIBUTION		jų •
******	************	************	************	********	**********	***********	**********	***********	****
	* RECEPI	OR PT. 1	•		*		•		•
,	• 1.556=02	04.04.0	•		•		•		
	• 1.556±02 • 4.991-02	.06948 .22277	*		•				
	<u>• 1 • 29.7 = 23</u>	. 70467	•				•		
4	* 1.696-D2	.07571	•		•		•		
	• 6.907-02 • 1.814-02	.30829 .08096	•		•				
-	<u>* 2.924-02</u>	.13051	¥ .		•		•		
8	• 2.411-02	.10761	•		•	destinate the second of the se	•		
	<b></b>		•			-	•		
TOTAL	* 2.245-B1	1.00000	•		•				
******	* * * * * * * * * * * * * * * * * * *	*********	**********	********	***********	**********	******	**********	****
					•				
			a tarabatiningolis on although the in make their Machine transmission although a			,			
		···							
					•				
				The read of the same of the sa					
						······································			

	,								:	•			1					; :								;		1	,	i	
4 0 D •		,					;				:		****		•			1								:					
1 = 1		1											1						1 ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ; ;							:				1	
CAD													1										***************************************				\$ 1 \$ 1 \$ 2 \$ 4 \$ 1				-
0													1										*								
= 9 OA																															!
ם •																		-													
-40																														***************************************	
C ND S											The street of th												; ;				\$ \$ \$				
900.		C#0	50			0 6	000	00	ב ב	10		5 C	CO	88	י כ		000.	ם,כ	8 : : : : : : : : : : : : : : : : : : :		0	0 0			. (2)	C) `C	<b>)</b>	O i	0 0	.000	0 0
11	2 = 1	07.0	000	010	0.0	0 0	000	0.0		0		. 0	0		<b>D</b> C	0	000.	o · c	1	0	0	o c	0	000		00	) I	O i	0 0	001	o : 0
	200	0 M D	000	000	000	000.	000	000	000.	000		000	000	000.	000	000.	.050	000		000.	000.	100	001	005	), C	$\circ$		Ο.	0 0	800.	0
2	20	0 F J	000		0	00	000	0			ri c	<b>7</b> C	00	00	0 2	0 0	900.	⊃ ⊸	1	, O 1 4	-	- 0	02	.027	03	<b>~</b> 0 ⋅ <b>₽</b>	660.	mi	03	037	03
•	  	CND 7	000	a: 0	C .	00		0.0	000	· ~ .	ii =	90	0	60	٦. ٢ - ا	u m	.142	T 3	1 :	145	3	3 ×	13	129	12	Ξ.:	- 1	10	200	160	6
CRO	38	OHO 9	· O C		00	S	- C	211	3 Y	.661	1 7	3: M	5.9	.559	· · ·	7 7	1	343	T i	316	6	ص ع	23	214	1.8	-1	4	.153	3 F	.127	15
1600,	_	040 S	, C) C	00	Ö	200	o 0	00	<b>&gt;</b> c	) (		מ מ	06	.080	0 -	2 =	21	٠		131	13	77	77	120	=	60	2 11	<b>O</b> :	0 0	060	8
2 = -	н.	ONO 4	000.		00	0	000	000	<b>=</b> =	0		<b>=</b> 0		0.0	<b>C</b> . 0	20	100.	o. c			-	<b></b>	<b>- ~</b>	.022	7	2	<b>7</b> 1 1		200	033	₩,
CHD	3	010	000		200	500	000	00	0 0	.000	). ε	<b>&gt;</b> C	00	00	ם מ	20	000.	⇒ o			000	000	0 0	100.	0 0	0	2 1	O.	8 5	. 106	$\mathbf{c}$
<b>a</b> (		· 🖼	000.	o: 🗯		0	000		00	0	i: 0	2 5		2	200	0	000.	) C		0		0.5	000	000		$\circ$	⊃ 1 ·	_ o:	$\supset$ $\mathbb{Z}$	.301	$\Box$
11 0	11	CV0	. 000	ם יב	0	0	000	<u>ت</u>	<b>-</b>	0	i (		00.	00.	00		000	900		0.	00.	00.		. 000		00.	00.	00.	00.	_	00.
9	3	181	2 2	· 0	0		200	0				7.0	0	0	0 0	200	1800	00	1 1	0	20	200	50.5	2600	90	06	3 !	9	202	3400	50

			OOR MODELING OF MODIFIED STA	CKS WITH DUCTED	RIDGEVENT		Care 4,	) stable
	.,			MISC	DATA			
	WIND SPEED (FT/SEC)	DIRECTION		DISPERSION EQUATION IEQUA		AMBIENT TEMPERATURE {DEG F}	TIME Adjustment Factor	INVERSION Layer Elevifti
	15.00	270.0		GIFFORD	E	70.0	1.0000	•000
	MIN. DOWNWIND DISTANCE	MAX. DOWNWIND DISTANCE	MIN. CROSSHIND DISTANCE	MAX. CROSSWIND DISTANCE (FII	NO. OF DOWNWIND INCREMENTS	NO. OF CROSSWIND INCREMENTS NY	PLOTTED OUTPUT DESIRED NPLOT	STACK LOCATIONS PLOTTED7 NLOC
	• 9	4 C O D + D	-2000.0	2000.0	41	11	3	٥
<u></u>		NO. OF STACKS NOS	NO. OF Z INCREMENTS NX	NO. OF AXIS SHIFTS NSHIFT	NO. OF CONC. LEVELS SUPPLIED NC	NO. DF RECEPTOR POINTS NR	NO. OF LINE CDORDINATES NL	
** *** ***		8	Ö .	1		<b>1</b>	5	



## CHEM-FAB ODOR MODELING COMPOSITE OF MODIFIED STACKS WITH DUCTED RIDGEVENT

		STACK DATA			REC	EPTOR POINT	DATA
STACK NO.	DOWNWIND DISTANCE FROM REF. 1FT1	CROSSWIND DISTANCE FROM REF. (FT)	EMISSION RATE OF POLLUTANT (SCFS)	STACK IDENTIFICATION	RECEPTOR POINT NO.	DOWNWIND DISTANCE FROM REF. (FT)	CROSSWING DISTANCE FROM REF (FT)
1	216.0	26.0	8.3000-03	TONER A.	1	572.0	• 0
2	260.0	4.0	1.1600-01	TOWER B.C.D (REDUCED TIP)			
3	266.0	-8.D	4.2600-01	TOWER E IREDUCED TIPI			
4	136.0	86.0		TOWER G (REDUCED TIP)			
5	132.0	8.8	3.6000-02	TOWER J (RAISED 20 FT)			
6	142.0	14.0	6.0000-03	TOWER K			
7	152.0	-38.0	3.6000-02	TOWER M			
8	294.0		9.5000-02				
				•			
	•						

·

The second secon

## CHEM-FAB ODDR MODELING COMPOSITE OF MODIFIED STACKS WITH DUCTED RIDGEVENT

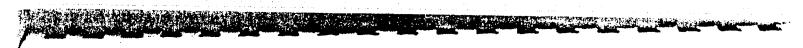
		STACK DATA			REC	PTOR POINT	ATA
STACK NO.	DOWNWIND DISTANCE FROM REF. (FT)	CROSSWIND DISTANCE FROM REF. (FT)	ENISSION RATE OF POLLUTANT ASCEST	STACK IDENTIFICATION	RECEPTOR POINT NO.	DOWNWIND DISTANCE FROM REF. (FT)	CROSSWIND DISTANCE FROM REF. (FT)
1	216.0	26.0	8.3000-03	TOWER A	1	572.0	.0
2	260.0			TOWER B.C.D FREDUCED TIPI			
3	266.0	-0.0	4.2600-01	TOWER E TREDUCED TIPE			
4	136.0		3.7700-01	TOWER & IREDUCED TIPI			
5	132.0	8.0	3.6000-02	TOWER J (RAISED 2D FT)			
6	142.0	14.0	6.000-03	TOWER K			
7	152.0	-38.0		TOWER M			
8	294.0	-104.0	9.5000-02	DUCTED RIDGEVENT		•	



### CHEM-FAB ODOR MODELING COMPOSITE OF MODIFIED STACKS WITH DUCTED RIDGEVENT

#### STACK DATA (CONT.)

STACK NO.	ACTUAL STACK HEIGHT (FT)	STACK TEMP. (DEG F)	STACK DIAMETER (FT)	VOLUMETRIC FLOW AT 70 DEG F (SCFS)	MOLECULAR WEIGHT OF GAS	HEAT RELEASE OR BUILD HEIGHT	STUHKE OR BUILD WIDTH OR HEIGHT	PLUME RISE EQUATION USED	YOLUMETRIC FLOW AT AMB. TEMP. (CU.FI./SEC)	GAS EXIT VELOCITY (FT/SEC)
1	47.50	582.00	1.00	12.50	29.10	300.00	25.00	B D O W N	12.50	31.29
2	39.00	437.00	1.00	55.10	29.10	300.00	25.00	8-D0 WN	55.10	118.73
3	48.50	544.0D	2.00	133.30	29.10	300.00	25.00	B-DOWN	133.30	60.38
4	52.00	584.00	2.00	117.80	29.10	300.00	25.00	B-DOWN	117.80	73.86
5	50.00	461.00	1.00	17.20	29.10	300.00	25.00	B-DOWN	17.20	38.06
6	32.80	520.00	1.17	17.20	29.10	300.00	25.00	8-00 WN	17.20	29.58
7	36.80	574.00	133	53.8n	29.10	300.00	25.00	B-DOWN	53.80	75.55
a	50.00	124.00	2.00	143.30	29.10	300.00	25.00	B-DOWN	143.30	50.76



## CHEM-FAB ODOR MODELING COMPOSITE OF MODIFIED STACKS WITH DUCTED RIDGEVENT

STACH		8.2				42.0
NO.	FPS .	FP5	FPS	FPS	FPS	FPS
1					52.9	
. 2	217.5	102.4	72.3	59.5	52.9	49.0
3	299.2	136.4	93.8	75.7	66.4	60.8
4					68.9	
5	143.2	82.2	66.2	59.4	56.0	53.9
6	126.6	64.9	48.8	41.9	38.4	36.2
7					49.6	
В	185.3	95.7	. 72.3	62.3	57.2	54.1

#### HANIHUM CONCENTRATION DATA

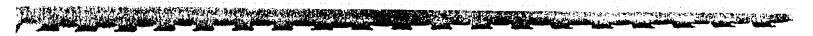
# INDIVIDUAL STACKS AT ALL WIND SPEEDS

STACK	3.0	8.2	15.0	23.2	32.2	42.0
NO.	FPS	FPS	FP5	FPS	FP5	FP5
1	1.29-02	1.72-02	1.56-02	1.30-02	1.07-02	9.00-03
2	5.90-02	1.26-01	1.55-01	1.59-01	1.50-01	1.38-01
3	9.89-02	2.36-01	3.10-01	3.31-01	3.24-01	3.05-01
4	9.40-02	2.11-01	2.65-01	2.75-01	2.63-01	2.44-01
5	4.87-02	6.53-02	5.91-02	4.93-02	4.09~DZ	3.43-02
6	1.08-02	1.89-02	2.02-02	1.84-02	1.60-02	1.36-02
7	1.93-02	4.27-02	5-42-02	5.65-02	5.43-02	5.05-02
8	7.03-02	1.21-01	1.27-01	1.17-01	1.03-01	.8.96-02

#### DISTANCE DOWNWIND OF HAXIMUM CONCENTRATION

#### INDIVIDUAL STACKS AT ALL WIND SPEEDS

9	STACK	3.0	8.2	15.D	23.2	32.2	42.0	
	NO.	3.0 FPS	FPS	FPS	FPS	FPS	FPS	
	1	4947.1	2207.B	1614.0	1379.3	1263.9	1196.0	
	2	9899.6	3304.0	1989.9	1497.1	1262.7	1127.9	
•	3	9899.6 13200.0	5019.2	2910.2	2127.9	1758.B	1547.7	
		13200.0						
		5389.1						
		4503.4						
		9579.5						
		7840.1						



## CHEM-FAB ODOR MODELING COMPOSITE OF MODIFIED STACKS WITH DUCTED RIDGEVENT

	ELEV	ATJON	DOWNWI	ND CROSSWIND
u	IIND AB	OVE WINI	5 H1FT F	ROM SHIFT FROM
2	PEED REFE	RENCE DIRECT	TION REFEREN	CE REFERENCE
(FT	/SECI (	FT) IDEG	.) (FT)	(FT)

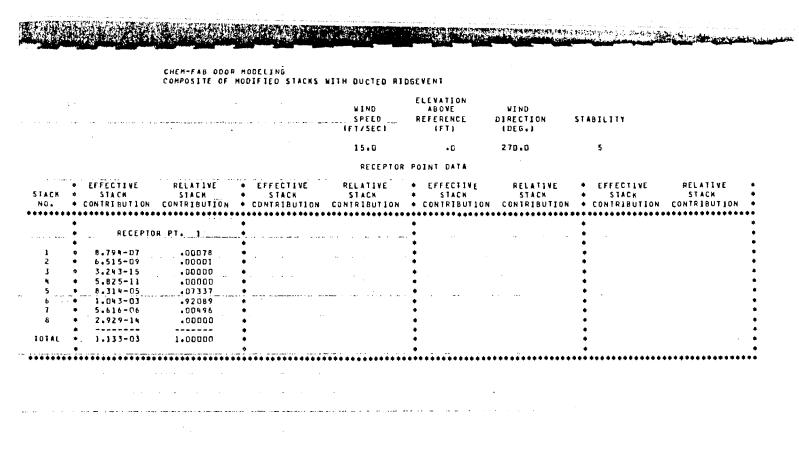
15-0 _____ 10 -___ 10 -___ 10 --- 10

		STACK	ATA			REC	EPTOR POINT	DATA
STACK	DOWNWIND DISTANCE FROM REF. (FII)	CROSSWIND DISTANCE FROM REF. (F1)	EFFECTIVE STACK HEIGHT (FT)	EMISSION RATE OF POLLUTANT (SCFS)		RECEPTOR POINT	DOWNWIND DISTANCE FROM REF. 4FT)	CROSSWIND DISTANCE FROM REF. (FT)
1	216. n	26.0	62.62	B • 3000-03		1	572.0	•0
2 3	260.0 266.0	4 • D + 8 • Q	72.29 93.85	1.1600-01 4.2660-01	· · · · · · · · · · · · · · · ·			
۹ .	136.0	86.0	95.19	3.7700-01				
5 6	132.D 142.D	8 · 0 14 · 0	66.25 48.76	3.6000-02 6.0000-03				
7	152.0	-38.0	68.77	3.6000-02				
a	244.0	-164.0	72.26	9.5000-02	DUCTED RIDGEVENT			



COMPOSITE	OF	MODIFIED	STACKS	MILH	DUCIED	RIDGEVENT	

		CONTRIBUTION TO				
	STACK NO.	HAXIHUM CONCENTRATION	RELATII N CONTRIBU		ICAT1 ON	
·	1	1.2156-02	.01393	TOWER	A	
and the second s	. 2	1.4369-01	.16462	TOWER	B,C,D IREDUCED TIPE	
	. 3	3.0575-01	.35029	TOWER	E (REDUCED TIP)	
CATTERNS NOW 2 12-2-4 TEST AND CONTRACTORS NO		2.1878-01	. 25064	. TOWER	G (REDUCED TIP)	
	5	4.8884-02	.05600	TO₩ER	J (RAISED 20 FT)	
	6	1.0856-02	·D1244	TOWER	K	
	7	4.5183-02	.05177	TOWER	H	
	В	8.7556-02	+10031	DUCTED	RIDGEVENT	
		DOWNWIND DISTANCE FROM REF.	CROSSWIND DISTANCE FROM REF.	MAXIMUM CONCENTRATION	STABILITY	Windspeed
		(FT)	(FT)			•
		2900.00	00	8.7285-01	E	15.0 fps



	RIDGE
	OUCTED
	HIL
	STACKS
MODELING	HODIFIED STACKS
CHEM-FAB DOOR	0.5
CHI	õ

	# 00 *				; t t t
	= 1				; ; ; ;
	0 %			:	1 1 1 1 1 5
	•				
	11			,	i 1 1 6
	•			•	1 1 1 1 1
	CHO				1 1 1 1 1
	-400.				:
	11 IO			1 ! !	· ·
	CRD			; ;	
	-800.				
	11 11				
•-	CVO				
24 0	1200.				
D F 15	T G	C K D C C C C C C C C C C C C C C C C C		003 003 008 008 019 019	0042 0056 0056 0072 0072 106
av'w	ONO CNO	C M D D D D D D D D D D D D D D D D D D	11.00 10.00 10.00 10.00 10.00 10.00 10.00	8827 8827 8827 8827 8868 8873 8873	00 00 00 00 00 00 00 00 00 00 00 00 00
ری	16 CO. 1200.	5 2 2 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0000	001 002 004 007 010 010 013	035 047 047 060 060 060
54/5	1; 11 11 N 6		0000		
	93	200 200 200 200 200 200 200 200 200 200			
	800.				
	11 11 -1 co		0000		
	CND	2000 2000 3000 4000 5000 5000 7000 8000 1000	1100 1200 1300 1400 1500 1600 1700 1900 2000	2100 2200 2300 2400 2400 2500 2700 2800 2900 2900 2900 2900	3100 3200 3200 3400 3500 3700 3700 3800
	:	•			

CHEM-FAB ODOR MODELING COMPOSITE OF MODIFIED STACKS WITH DUCTED RIDGEVENT

MAX DOWNWIND CONC. UNDER ALL METEOROLOGICAL CONDITIONS

											:										1																	
# Q Q •																					1										1							
CVD			•																		1																	
0										٠											1										;							
11 40							•				1											,																
QRO		c		0 (	<b>.</b> .			0	0	<b>.</b>	1	_					<b>.</b>	<b>.</b>	<b>-</b> -	- <b>-</b>	1	_				_	0	0.	٠.			_	_		N 6	. ~	. ~	_
.00	CVD	<b>-</b> - 2	8	00		2	8	00.	0	<b>2</b> 0	1	5		0	00.	00	00.		•		1	Ċ		00	00	000	00.	200		5		.00	00.	ם נו	ם ב		8	• 00
D # = = = 5	Q.A.J	0 0	000	000.	000.		000•	000•	000	000.	1	000	000	000.	.050	000	000	900.		000.	3 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	000	.00	.001	• 002	• 005	• 003	.003	•	• 002		0	0		o c		<b>600</b> •	0
Q III D	CND	000.	85	3 8	000.	000	.000	• 000	8 8	000.		000	8	000•	900.	000	.001	100	200	900.	1	2	.011	0	0	.017	•019		מ כ	.023		02	70		700	02	• 026	•059
		000.	000	<b>o</b> c	0		0	0	0 0	<b>0</b>	11	0	0	<b>•</b> 008	-	- 1	36	2 0		.061	1 . I . I .		0	~	~	-	~ 1	9/0		۰.		~ -	- (	D Q	0	60	101	0
CND 4 =	O KO	000	000		0	000	1001	100.	670.	.087		.124	. 155	.176	∞ י	2D C	2 r	. ~	. 3	642		#	~	2	0	0 (	<b>بر</b>	2000	<b>,</b>	.217	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	2,0	,	<b>,</b>	, ~	~	# Z Z B	~
-1200.		0	000	38	05	. 129	26	7 7	0 -	66	* * * * * * * * * * * * * * * * * * *	5		6668	5	9 4		3	5	20	***************************************	. 743	~	. 804	~	37 L	ה מ		87	.873		0.64	9 4	<b>.</b>	3	83	~	8 1
CND 3 =		000		000	.000				053			113	. 140	. 159	9 9	, c	222	23				.235	7	.214	20	2	, ,	203	2.1	+218	1 : 1 : 1 : 1 : 1 : 1 : 1 : 1 : 1 : 1 :	. 222	; ;	22	~	2	~ 0	v
	<u> </u>	000•	000	000	000	000	000.		000	000.		.001	• 00 5	000	2 6	.022	03	03	•	₩.		. 062	.067	010.	.073	3 6	. 071	690.	.067		1	.069	5	08	0.9	* 0 b #	. 097	•
1 11 6	3 m	000	000	• 000	000.	" 000°	000.		000	000.		000	000.	000		00	100.	.002	0	• 000		.007	600.	0 :	510	015	3 2	010	•020	.021		.022	~	2	2	2	420.	
	* ~	000	000	000	000	000	000	000	000	000	t t	000	0		3	ت		0		0		0.0	0 0	ט מ	3 6		2 2	0	Ö	.00		• 00 5 • 00 6	_		J	o :	9008	>
1 = -2600. 8 = 900.		000	. 0	000		2 0	000	000	• 0000	000		000	20.1	000	000	00	000		000	000		000				i i		. 00	000.			100	10	01	,002	7 6	200.	
CMD	•	0	2 ù D	00 S	00%	1	09 <b>.</b>	8 00	9.0	1000		1100	1300	14.00	1500	1600	1700	1600	1960	2000		2100	4 2	າລ	25.00	. 40	7	2800	2900	<b>J</b> 1	•	3100	30	4		, ,	3400	



#### CHEM-FAB ODOR MODELING COMPOSITE OF MODIFIED STACKS WITH DUCTED RIDGEVENT

METEGROLOGICAL CONDITIONS CORRESPONDING TO MAX DOWNWIND CONC.

STABILITY T. WIND SPEED . ....

30 26 39 40 50 60 16 80	0 8 = 800	CWD 11 = 2000.  CWD 7 8 9  00 00 00  00 00 00  1- 8.2 00 00  1- 8.2 1- 8.2 00  1- 8.2 1- 8.2 1- 8.2  1- 8.2 1- 8.2 1- 8.2  1- 8.2 1- 8.2 1- 8.2	5 = -400. CMD 6 = 0. CMD 7 = 400.  CMD
110	1 - 3.0	1- 8.2 1- 8.2 1- 8.2	1- 8.2 1- 8.2
126		1- 8.2 1- 8.2 1- 8.2	1- 8.2 1- 8.2
130		1- 8.2 1- 8.2 1- 8.2	1- 8.2 1- 8.2
140		1- 8.2 1- 8.2 1- 8.2	1- 8.2 1- 8.2
150		1- 8.2 1- 8.2 1- 8.2	1- 8.2 1- 8.2
166		1- 3.0 1- 3.0 1- 3.0	1- 3.0 1- 3.0
176		1- 3.0 1- 3.0 1- 3.0	1- 3.0 1- 3.0
180		1- 3.0 1- 3.0 1- 3.0	1- 3.0 1- 3.0
230	1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 5-15.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 5-15.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 5-15.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1-	1- 3.0 1- 3.0 1- 3.0	1- 3.0 1- 3.0
240		1- 3.0 1- 3.0 1- 3.0	1- 3.0 1- 3.0
250		1- 3.0 1- 3.0 1- 3.0	1- 3.0 1- 3.0
260		2- 8.2 1- 3.0 1- 3.0	1- 3.0 1- 3.0
270		2- 8.2 1- 3.0 1- 3.0	1- 3.0 1- 3.0
280		2- 8.2 1- 3.0 1- 3.0	1- 3.0 1- 3.0
290		2- 3.0 1- 3.0 1- 3.0	1- 3.0 1- 3.0
3361 3461	3 1- 3.0 1- 3.0 1- 3.0 2- 3.0 2- 3.0 5-15.0 1- 3.0 1- 3.0 1- 3.0 2- 3.0 2- 3.0 5-15.0 1- 3.0 1- 3.0 1- 3.0 2- 3.0 2- 3.0 5-15.0 1- 3.0 1- 3.0 1- 3.0 2- 3.0 2- 3.0 5-15.0 1- 3.0 1- 3.0 1- 3.0 2- 3.0 2- 3.0 5-15.0 1- 3.0 1- 3.0 1- 3.0 2- 3.0 2- 3.0 5-15.0 1- 3.0 1- 3.0 1- 3.0 2- 3.0 2- 3.0 5-15.0 1- 3.0 1- 3.0 1- 3.0 2- 3.0 2- 3.0 5-15.0	2-3.0 2-3.0 1-3.0 2-3.0 2-3.0 1-3.0 2-3.0 2-3.0 1-3.0	1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0 1- 3.0

1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1
.0 2- 3.0 2- 3.0 5-15.0 2- 3.0 2- 3.0 2- 3.0 1- 3.0 1- 3.0 0 2- 3.0 2- 3.0 2- 3.0 1- 3.0 1- 3.0 0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2- 3.0 2-
3700 1-3.0 1-3.0 2-3.0 2-3.0 2-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3-3.0 3